

COMPUTERWORLD

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NASA data storage problems are reaching cosmic proportions, according to a government report. Page 123.



Not straight A's, but Wang President Richard Miller is getting good

marks from analysts, users on turnaround plan. Page 4.

AT&T to hitch up with Tandem, HP in Unix love-in scheduled for this week. Page 123.

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Adam Osborne vows to return in artificial intelligence garb. Page 97.

Downsizing payoff was worth the risk for early practitioner. Page 57.

Less is more when it comes to executive information, EIS users say. Page 71.

Complex crimes stall enforcers

Second in a four-part series

BY MICHAEL ALEXANDER
CW STAFF

When a competitor allegedly stole a tape containing a copy of Phase Linear Systems' top main-frame software product from a Phase customer, executives at the Phoenix-based firm naturally went to the police. However, the lack of a serious attempt by local authorities to investigate and prosecute the case has left the company executives wondering why they even bothered to report the crime in the first place.

After two years, the case remains unresolved, even though the culprits are known and have admitted taking the tape, said

Phase general manager Tom Darcey.

"The police advised us that the theft of a \$10,000 piece of software was a low priority," Darcey said. "To them it was an inexpensive reel of magnetic tape, but to us it could have been a disaster because it doesn't take much to figure out that the competitor would analyze the program."

Law enforcement officials at local and federal levels admit

they have their hands full with a wide range of serious crimes and say that computer-related crime is not a high priority. However, they also argue that they are more willing and able to investigate these crimes than in recent years.



David Flaherty

It is just that the job is a lot bigger than anyone had ever suspected. Computer-related crimes are time-consuming to investigate and hard to prosecute,

Continued on page 4

D&B fires back; says Dodge quit

BY NELL MARGOLIS
CW STAFF

CAMBRIDGE, Mass. — The second shoe dropped last week in the legal battle between former McCormack & Dodge Corp. President Frank Dodge and The Dun & Bradstreet Corp.

Shoe? Make that "combat boot."

In a 105-page retort to a suit filed here March 1 by Dodge, D&B, M&D and two individually named defendants alleged that the former software entrepreneur stooped to untruths, half-truths and sly evasions to slide out of a noncompete contract.

Dodge was not fired, as he had claimed, according to D&B et al. He quit — and gracelessly at that — while feigning concern with his role in the newly merged Dun & Bradstreet Software and secretly mounting plans to start his own competing firm, the defendants said.

Far from being slighted, the defendants contended, the former M&D head was wooed by D&B with offers of lavish pay, major responsibility, significant autonomy and prestige.

Continued on page 6

View from the front lines

"My company gets its money's worth for its expenditures on IS."

Percent of respondents*
(Base of 512)

Agree
51%

Don't know
22%

Disagree
26%

*Does not total 100% because of rounding

CW Chart: Tom Monahan

Department managers give IS a thumbs-up on value delivery and overall performance. In a CW survey of more than 500 managers in end-user functions, a majority reported that relations with IS have improved in the past two years. That's fortunate, because 74% said their need for IS is growing. Page 79.

Stopgap net protocol sets down roots

BY ELISABETH HORWITT
CW STAFF

A protocol originally billed as a one-night stand in multivendor network management is becoming such a hit at user sites that it may even upstage its follow-up act, Open Systems Interconnect.

Simple Network Management Protocol was designed to be a down-and-dirty, stopgap solution until the "real" network management standard, OSI's Common Management Information Protocol, came along. "SNMP activity is a fruitful beginning that aimed low and hit its target," said Daniel Lynch, president of Cupertino, Calif.-based consulting firm Advanced Communications Environments.

However, OSI's snail-like progress toward commercial viability has given SNMP a chance to win the hearts of users —

Continued on page 14

IN DEPTH

Big discounts on campus irk dealers

BY AMIEL KORNEL
CW STAFF

Once, Myles Schachter had a thriving personal computer dealership. His two stores in northeast Kansas were drawing annual revenue of over \$2.6 million, with about one-third coming from students and faculty at local universities.

However, when the University of Kansas and Kansas State University decided in 1988 to begin selling discounted PCs to students, Schachter nearly went out of business, he says. As retail revenue, which accounted for half of the profits at Schachter's Connecting Point

Computer Center stores, plummeted 91% in six months, he slashed his 30-person staff down to 15.

By his own account, the number of PCs sold to local students and faculty dropped tenfold — from around 700 yearly in 1986 and 1987 to about 70 per year in 1988 and 1989. An audit by the state later revealed that bookstores at the two schools sold 1,573 computers during those two years for a total of \$3.5 million.

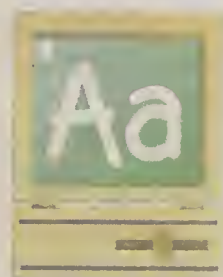
Recent interviews with retailers in several states confirm that similar scenarios are being

played out in university towns across the country. "I'm not alone," Schachter says. "This is a national problem."

Personal computer dealers, angry over what they see as unfair competition from higher education, plan to kick off a nationwide legislative campaign tomorrow that educators interviewed say could undermine their efforts to promote computer literacy in the United States.

Dealers are preparing to step up lobbying of state and federal lawmakers to curb on-campus PC sales, a market

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Quotable

"They think it's kind of like magic. They think it's a matter of writing a program, and that might take a day or two."

RON GELLISH
K MART CORP.

On sales and marketing users' perceptions of IS processes. See story page 79.

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IN DEPTH

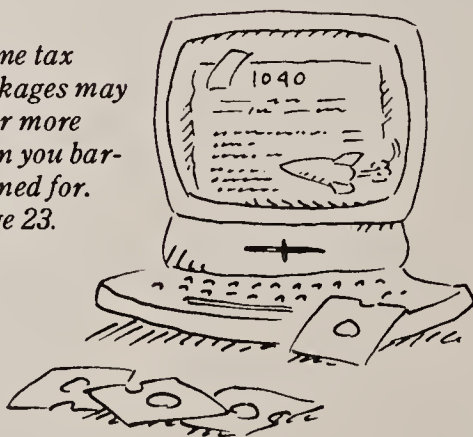
- 1** Higher education and retailers clash over who will supply students with PCs. By Amiel Kornel.

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Last week, AST Research and Sprint International joined Data General, Microsoft, Ashton-Tate, Computerland and a raft of others that have already planted flags in the warming Soviet soil. You can be sure this is just the beginning. Why? Well, according to *Computer Sweden*, an IDG publication, it will be at least seven years before the supply of PCs to the Soviet Union catches up with demand. It's now almost impossible to get anything more powerful than an 8088-based machine, and engineers are starving for more horsepower. The publication also says that the PC XT clone you buy in the U.S. for \$1,500 can fetch up to \$70,000 on the Soviet market. Free enterprise, anyone?

Home tax packages may offer more than you bargained for. Page 23.



Katherine Lambert

Michael Jecko leads cost-conscious IS to support the retail development business of The Rouse Co. Page 71.

EXECUTIVE BRIEFING

■ **Hey, there's good news.** The typical IS group's target customer — the department manager — reports that relations with IS have improved during the past two years, with the systems professionals seeming to understand users' needs. Adding to the importance of that finding in a *Computerworld* survey of business managers is that 74% of those in the user base say their need for IS services is growing. **Page 79.**

■ **Computer crime is bigger and more difficult** than anyone expected. With many cases involving several suspects in several states, prosecution can be a nightmare. So say law enforcement officials, who acknowledge computer crime isn't high priority but also say that's not the sole reason the job isn't getting done. **Page 1.**

■ **Will an EDI lawsuit help?** Some observers of electronic data interchange, which has yet to win widespread acceptance, believe so. They suggest that a legal dispute could help resolve questions that may be preventing some users from jumping on the EDI bandwagon. **Page 57.**

■ **Richard Miller, president of Wang Laboratories, gets good grades** from users and analysts who say he is not only trimming the fat but also focusing the company back on its customers. **Page 4.**

■ **IBM is targeting big banks** with a high-speed image system intended to automate the labor-intensive task of check processing. **Page 6.**

■ **Echlin, a downsizing veteran,** looks at five years of a smaller-is-better approach and says it was well worth the switch. The auto parts maker, which moved from a mainframe to a PC LAN-based system, points to a reduced IS budget and staff as proof. **Page 57.**

■ **Think of what you want in an executive information system** and then throw half of those ideas away. EIS is an effective tool when it contains only critical information and is easy to use, one user claims. **Page 71.**

■ **Frito-Lay found a way to end the debate of decentralized vs. centralized IS.** It does both. The company relies on centralized control, helped along by an IBM DB2 engine, and decentralized decision-making. This allows it to keep track of national sales while also tai-

loring snack promotions to individual sectors of its varied customer base. **Page 77.**

■ **Help! Some information systems managers say they're getting too tangled** in an open systems web. IS faces difficult issues when considering a move from proprietary to open systems. But at least one manager notes that the open system issues are becoming so time-consuming that less time is spent on the larger business issues. **Page 37.**

■ **Health care providers are caught up, too.** They find themselves in a squeeze as governments, insurers and employers strike back at skyrocketing medical costs. Information systems provide one cure for their ills: Hospitals and other institutions are hiring more CIOs and rolling out patient care systems to streamline operations. **Page 105.**

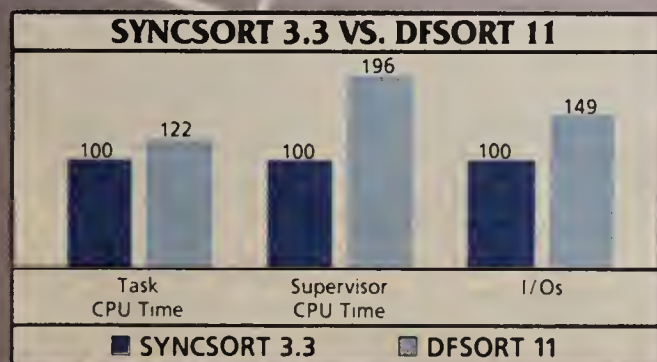
■ **Most companies have come a long way** in giving IS training more direction and control, which should make planning and delivering programs more easy and more accurate. However, they still have a way to go. Most companies don't have an IS curriculum that lets managers adjust training to market conditions. **Page 121.**

■ **If you are one of the millions of Americans with a home computer** and use it at least in part for business, you could be missing out on tax breaks. Most people eligible for the deductions are either self-employed and working out of their home, using a computer to do work at home or using it to manage investments. **Page 117.**

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Wang's Miller gets good marks

BY PATRICIA KEEFE
and NELL MARGOLIS
CW STAFF

A midterm report card from users and analysts last week gave Wang Laboratories, Inc. President Richard Miller a hard-earned B average for an aggressive turnaround campaign.

"It's very important that Miller stay with the company," said Matthew Gillman, president of the U.S. Society of Wang Users. "He is very customer-, manufacturing- and financially oriented, which is what the company needed, not another brilliant computer engineer."

Miller's success is tied to his understanding of three key points, agreed Robert Cameron, Dataquest, Inc.'s East Coast research director. "You can't run a business without a direction to go in; you can't run around owing \$500 million; and the future for second-tier companies is in applications," he said.

Seven months into his reign, Miller, a hard-nosed manager who left General Electric Co.'s consumer division to whip the flabby computer company into shape, has been so successful at trimming the fat and chopping the deadweight that he's earned the moniker "Rick the Knife" among some Wang employees.

Miller's theme — "customers first" — is also winning plaudits from wary users.

"I can tell you for a fact that stonewalling of customers has stopped. Even small users now get attention," said Bob Cairns, a sales manager at Integrated Business Software, a Boston-based Wang developer and user.

Wang still has a way to go,

said Mike Stone, manager of computer service at Oregon General Service Department in Salem, Ore.: "I'll believe I'm seeing a new Wang when I start hearing suggestions [to problems] that don't have an expensive hardware purchase on the bottom line."

Users seemed most inclined to reserve judgment on the issue of Wang's software expectations. Does Wang still have the talent to produce fantastic applications delivered on time? That's what analysts such as Judith Hurwitz at Patricia Seybold's Office Group said is necessary to bring Wang back into competitive form.

A slower death

The specter of slow technology development is far more chilling than that of further profitless quarters for Wang, according to Jack Crawford, IS vice-president at Hartford Insurance Group.

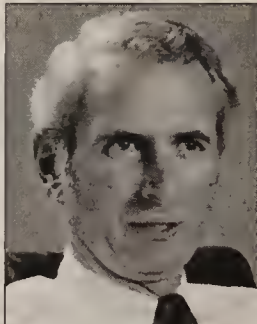
On the other hand, both Wall Street and corporate purchasing agents are wild about Miller's dogged pruning of overhead expenses as well as his success in significantly reducing his pauper's inheritance, a staggering debt of \$575 million.

But Shao Wang, an analyst at Smith Barney, Harris Upham & Co., rebutted Miller's statement that the firm will be profitable following the June quarter. Wang will inch into the red in the fourth quarter of 1990, but just barely, he predicted.

In the past month, Miller capped off a breakneck campaign to pull the struggling minicomputer maker from the brink of financial ruin by pulling off what many analysts had said was im-

Taming the deficit

Most of the proceeds from asset sales have gone into reducing Wang's debt, which Richard Miller estimates is now less than \$93 million



1989	• Miller inherits \$575 million debt
Aug.	
Aug. - Nov.	• \$150 million — sale of Wang Credit Corp. lease portfolio
	• \$37 million — sale of European subsidiary
	• \$13 million — sale of plant in Scotland
1990	
Jan.	• \$2 million — sale of Wang Country Club
	• \$116 million — sale of 30% interest in Taiwan-based subsidiary
Feb.	• \$250 million — sale of Wang Leasing Corp.
March	• Undisclosed amount from sale of Intecom subsidiary
	• \$12 million — miscellaneous savings since August

CW Chart: John York

possible — finding a buyer for Intecom, Inc.

Wang bought the Allen, Texas-based packet-switching firm for an estimated \$250 million in 1986. Last week, sources said the company was unloaded at a fire sale price to Matra Communication, a French telecommunications concern. Estimates of the sale price vary between \$50 million and \$70 million.

Two weeks ago, Miller's former employer gave him a hand in slashing another \$250 million off his debt. GE Capital Corp. acquired Wang's international lease financing operations.

In seven months, Miller has eliminated a reported 2,000 jobs and cut \$492 million from Wang's debt. In short, he has done what he said he would do pretty much when he said it would be done, Crawford said — winning back nervous executives who were considering migration to other platforms.

"There's no question that the big bosses weren't too interested in continuing [with Wang] last summer, but now that things have turned around, I feel Wang will continue here," said Bill Sturgeon, a senior systems specialist at Solar Turbines, Inc. in San Diego. Gillman has also gotten a go-ahead from his organization to expand his Wang system.

Miller has been trying to stem the flow of defecting users. But despite headway in some sites, some users said Wang continues to drop the ball in other areas. For every user like Johnny Hill, a training manager at Hughes & Luce in Dallas who said Wang actively sought her input, two would cite instances in which suggestions went unheeded.

For example, Gillman said a user group to which he belongs asked Wang to look into providing a freestanding interface between laptops and the VS minicomputers: "We suggested it in early February," he said, "and there has been limited reaction."

Another issue is whether VS will take a backseat to Unix. The company's recent embrace of Unix as an open platform left some confusion in its wake, Cairns said. "A lot of us don't care about Unix; we're committed to VS," Sturgeon said.

Crime

FROM PAGE 1

said Gail Thackery, an Arizona assistant district attorney.

Computer crimes that include telecommunications fraud extend across state and federal jurisdictional boundaries, thus making collaboration on an investigation difficult. Telecommunications carriers are often unwilling to cooperate for fear of violating privacy laws that could allow the criminal to sue.

Virtually every case is larger than it first appears and often involves several criminals in several states, Thackery said. One case now nearing completion, involving a hacker group that has made repeated attempts to take over a hospital computer system, has taken nearly 1½ years to investigate, which is typical for most crimes of this sort.

During the past decade, there have been only 250 prosecutions of computer-related crimes, ac-

cording to Kenneth Rosenblatt, who heads a computer crime task force in the Santa Clara District Attorney's Office in San Jose, Calif.

More stringent and technically precise laws are sorely needed, especially on the federal level, according to many legal experts.

The Computer Fraud and Abuse Act of 1986, a key federal crime-busting statute, is ambiguous and does not adequately cover the broad range of computer-related crime, said Joseph Tompkins, a partner in the Washington, D.C., law office of Sidley & Austin and chairman of the American Bar Association's Criminal Justice Section's Task Force on Computer Crime.

"There is ambiguity in terms like access, authorization and some other terms," Tompkins said. There are also a variety of

schemes for intruding in other people's computers that are not covered by the existing statute.

Forty-eight states have adopted legislation that deals with computer crimes, and the other two are currently considering such legislation. Several states are also considering, or have passed, laws that would specifically be aimed at virus attacks.

However, law enforcers and legal experts cannot agree on whether the nation needs new laws aimed specifically at combating computer-related crimes or whether the existing laws are adequate.

"New statutes, complete with precise technical definitions, only lead to legal problems," said Ken Citarella, assistant district attorney for Westchester County in White Plains, N.Y.

He advocated "making older

statutes fit new crimes," even though he was a member of the state computer crime panel that wrote New York's current computer law.

Computers and the information they contain should be considered property, and like any other property, would be covered under existing statutes, he argued: "If a vandal breaks into a computer, why would that be any different than if he breaks into a car?"

"I see it the other way around," Tompkins said. "Without specific legislation that deals with current technology, you have to rely on old theories of law covering trespass and embezzlement, for example, that are difficult to apply to current computer crimes. It is easier to attack the law generally than for someone to attack it specifically."

In Computerworld's next issue, part three examines the state of corporate computer security.

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708/827-4433

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IDG News Service
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Main Editorial Office
Box 9171, 375 Cochituate Road

Framingham, MA 01701-9171

508/879-0700

Fax: 508/875-8931

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David Flaherty

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Image yields interest at banks

Collaboration results in imaging system to automate check processing

BY AMY CORTESE
CW STAFF

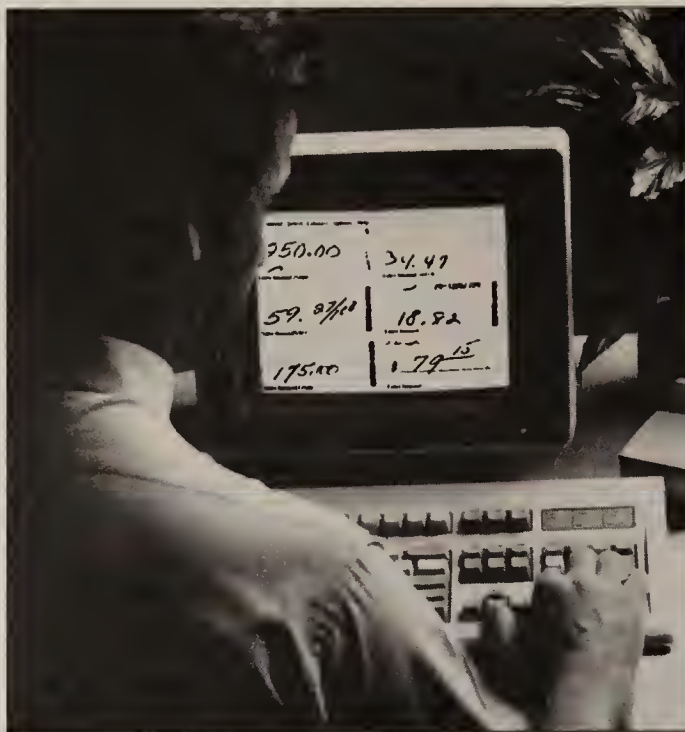
PALM SPRINGS, Calif. — The fruits of a joint effort between IBM and a handful of major banks were unveiled last week as IBM introduced a high-performance image system to automate many of the paper- and labor-intensive operations of large financial institutions.

Working in conjunction with six U.S. and Canadian banks, IBM has developed image capture and processing hardware and software designed for large banks that process millions of checks per day. Moving an electronic image through an enterprise rather than a paper check will cut down on the staff needed to do the manual keying in of data and increase overall productivity by roughly a factor of three, IBM and its banking partners claimed.

Production systems are anticipated by year's end. IBM said

21 additional banks will take delivery this year, including American Express Corp. and Citicorp, in addition to the six co-developer banks.

Although the Imageplus High Performance Transaction System (HPTS) makes use of IBM hardware and software already installed in many large banks — 3090 mainframes running MVS/ESA, Personal System/2s, IBM check processing equipment, DB2 and VSAM — HPTS will nonetheless carry a hefty price tag. A simple pilot system could cost \$1 million, even if much of the prerequisite equipment is already installed, while full-blown systems range into



IBM's Imageplus has an image processor that recognizes printed and handwritten check amounts

the tens of millions of dollars.

Massive amounts of disk storage are also needed to store and manipulate images of checks,

which can take up to 40K bytes per image. The Royal Bank of Canada in Toronto, an IBM partner bank, said it will need 300G bytes of disk to store five days'

worth of check images for one of the bank's three processing centers.

Michael Howard, a program director at Stamford, Conn.-based Gartner Group, Inc., maintained that initially only large banks with centralized operations could justify the investment, while smaller banks may look to NCR Corp. and other suppliers of low-end imaging systems.

Imageplus HPTS draws on technology used in IBM's existing Imageplus system but adds image-capture front ends and software that supports breakthrough speeds of up to 2,400 documents per minute. The 3898 image processor is also able to recognize printed

and many handwritten check amounts, reducing the need for clerical support.

With HPTS, incoming bundles of checks are fed into a high-speed reader/sorter equipped with the IBM 3897 Image Capture System, where the images are compressed before being sent to an IBM mainframe and indexed. Check amounts are read using the 3898 Image processor with Image Recognition Services Software. If an amount cannot be recognized — IBM conservatively estimates a 50% recognition rate — then the image is sent via local-area network to PS/2s running OS/2 Extended Edition, where operators view several images at a time and key in amounts. Work-in-progress software tracks the work flow through the system.

Bank executives attending an IBM conference here last week said the investment in image will pay off in lower costs, increased productivity and improved customer service.

"Image will be the breakthrough of the 1990s," said Jean Perret, a vice-president at Citibank's Latin America and Canada Division.

DEC details severance offer at plant

BY MARYFRAN JOHNSON
CW STAFF

Digital Equipment Corp. last week offered 620 out of 660 employees at its Phoenix manufacturing and distribution facility a financial incentive to quit the company.

The voluntary severance plan, which industry analysts believe will be offered to at least 8,000 U.S. employees over the next few months, was presented to 540 manufacturing workers and another 80 employees in DEC's distribution center. The workers have 13 weeks to take the offer, beginning April 2.

DEC spokeswoman Nikki Richardson said from 30% to 50% of the 620 employees are expected to grab the financial support option, which offers a lump sum payment of 40 to 104 weeks' salary plus a full year of life, dental and medical coverage. The move will eliminate two of the four business groups now headquartered there. The manufacturing and distribution groups will be eliminated, but not the 40 employees in the software financial management center and in-house field service groups.

Employees who decline the financial package must choose one of DEC's alternatives: relocation to another job site, retraining or "reskilling" for another job.

D&B

FROM PAGE 1

Dodge rejected job after job, including one that was tailored according to his own plan, according to the D&B papers. Why? Because, the papers suggest, no contract contained the single term with which Dodge had become obsessed: the promotion of himself above former Management Science America, Inc. (MSA) President and legendary M&D nemesis John P. Imlay Jr., now chairman and chief executive officer of DBS.

Moreover, the defendants said, Dodge hinted at dire consequences in terms of damaging publicity should D&B fail to provide him with "generous severance terms."

"Obviously, I disagree with the majority of that document," Dodge said. "I stand by the statements in my complaint."

D&B said that could be a shaky place to stand. Dodge claimed in his suit that D&B, after several years of apparent satisfaction as corporate owner of M&D, suddenly acquired M&D's longtime bitter competitor, MSA, merged the two firms and drove Dodge out of a firm he helped create [CW, March 12].

The defendants' rejoinder, however, alleges that the only supporting "facts" submitted by Dodge appear in Dodge's own affidavit — a document that fails to make its case on technical legal grounds and "is fraught with very serious misrepresentations and omissions."

At the heart of the flying fur is a single question: Is Dodge

bound by a one-year noncompete agreement? This, in turn, hangs on whether or not Dodge was "discharged without cause" — apparently the sole, narrow exception to the otherwise binding contract.

At risk for Dodge is his newly incorporated company, Frank Dodge Associates, Inc. — currently a shell, but created to house a business software firm, Dodge said earlier this month.

At risk for DBS, according to the papers filed last week, is its own pool of talent and connections — the likeliest fishing hole for Frank Dodge Associates. "Dodge is more familiar with the internal workings of the defendant corporations and their employees now than he ever will be again, and he has greater ability

Take that!

In a series of legal papers, Dun & Bradstreet and co-defendants in the suit filed by former M&D President Frank Dodge allege that he:

- Walked out on a \$300,000 to \$400,000 annual salary and a choice of high-level, high-power jobs offered by D&B
- Co-authored the press release in which he says he first read of John Imlay's promotion
- Is trying to put a gag on D&B while airing his own quarrel in public
- Incorporated a new company days before he claimed to have been fired from his old one — and five days before the incorporation date to which he swore in court papers
- Filed a lawsuit replete with "serious misrepresentations and omissions"

CW Chart: Doreen Dahle

to take advantage of M&D's corporate opportunities," the papers said.

Did Dodge get the boot, or is he getting his kicks?

A judge may have to decide that. Dodge's motion for a preliminary injunction against D&B et al is scheduled for hearing on March 30.

Stormy weather for launching

Meanwhile, back in Atlanta — and in Natick, Mass., New York, London, Paris and assorted other operational bases worldwide — John P. Imlay Jr. still has a company to launch.

Last week, the first chairman and chief executive officer of Dun & Bradstreet Software (DBS) professed to be disturbed but undeterred by the Frank Dodge lawsuit, "the rumor mill" and the resulting gust of ill will that blew by the March 1 start of the newly merged firm that aims to rule the IBM business software market.

"If anything, we're 30 to 40 days ahead of schedule," the former Management Science America, Inc. (MSA) president said. He said that despite postmerger anxiety — most of the questions fired at him from employees "translate right into 'Do I still have a job?'" — the field force, he said, "is out there in the field." And it's out there with a joint portfolio, he added

— to shore up D&B's oft-reiterated promise to retain all M&D and MSA software lines.

As of today, the fledgling DBS also has a full executive suite. The management team reporting to Imlay includes a surprise entry: former M&D Chief Operating Officer Hank Holland, who has returned as executive vice-president of development and customer services.

M&D's Dean Redfern is executive vice-president and general manager of Natick operations. M&D general counsel James Alberg now serves as general counsel for DBS, and Edward Kane of MSA will head quality control. Other former MSA officials include Michael Hunt, who becomes executive vice-president of international operations; Douglas MacIntyre, heading U.S. field operations; Chief Financial Officer William Evans; and head of marketing and technology James Henderson.

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11-CW-X-900319

NEWS SHORTS

IBM cries foul

IBM has filed a formal protest against a U.S. General Services Administration (GSA) mainframe acquisition proposal that IBM said favors computers made in Japan and other foreign countries. IBM's protest, filed March 8 at the GSA Board of Contract Appeals, said the offending procurement clause violates the spirit of the Buy American Act of 1933, which requires the government to give preference to U.S.-made products.

Users to IBM: Cool it

Guide International, the large IBM user group, is asking IBM to pare down the volume of product announcements sent out to its mainframe customers. Guide, which held its 76th convention in San Francisco last week, has set up a special committee to discuss the matter with IBM, according to Guide's new president, Benjamin Parke. Parke said, "I get a big, thick packet of announcement material every two weeks, including a summary and all the details. What we're working on is getting IBM to send only the announcement materials a user requests."

Oracle graphics tools debut

Oracle Systems Corp. announced a new set of application development tools designed to support graphics presentations of data stored within the Oracle relational database management system. Oracle Graphics will initially be offered for use with Sun Microsystems, Inc. workstations at a price range of \$1,400 for a single-user license to \$19,000 for a 64-user site license. A version for the Digital Equipment Corp. Vaxstation is scheduled to be available in the third quarter this year.

Software piracy brings jail terms

Two men have been found guilty of illegally copying software packages and sentenced to four months imprisonment by a judge in London. In addition, the court ordered the defendants, Francis Johnson and Christopher Swallow, to pay fines of 1,200 pounds (\$1,922). Acting on information supplied by UK-based Systems Union — one of the companies whose software was copied — a raid by UK police and the Federation Against Software Theft uncovered illicit software from Systems Union, UK's Micro Focus and Wordstar International.

Toshiba develops 10M-byte card

Toshiba Corp. announced last week a tiny integrated circuit card with 10M bytes of memory that is made up of 20 4M-bit dynamic random-access memory chips. The company will begin marketing samples worldwide in May for \$2,000. The credit-card-size device can be plugged into tiny portables, Toshiba said.

Oops from IRS

The Internal Revenue Service's Electronic Filing System, available in all 50 states for the first time this year, is only as reliable as the rest of the IRS system. Two separate incidents have caused two-week delays for as many as 223,000 tax returns, 84,000 of which were filed electronically. Both incidents were blamed on faulty magnetic tapes, which are used to transfer all tax records to the IRS' Martinsville, W. Va., office, where the returns are processed and checks are cut. "These problems were a result of the overall system, not the Electronic Filing System, and proves the need of the IRS to modernize this antiquated system," said IRS spokesman Frank Keith, who added that the IRS is in the first year of an eight-year modernization plan.

Andrew shines Emerald

Two players in the IBM midrange connectivity market joined forces last week when Andrew Corp., a supplier of gateways linking IBM computers and non-IBM peripherals, acquired Emerald Technology, a developer of communications products for IBM's System/3X and Application System/400.

More News Shorts on page 124

Bad news tempers Dell entries

BY RICHARD PASTORE
CW STAFF

AUSTIN, Texas — Dell Computer Corp., a pioneer of the mail-order personal computer business, this week plans to special-deliver two new high-end PCs. But last week it also sent a costly reduced instruction set computing (RISC) development project to the dead letter office, lost its president and posted a profit that was anything but first class.

Dell is expected this week to unveil its first PC based on Intel Corp.'s I486 chip. The box incorporates the Extended Industry Standard Architecture rather than IBM's Micro Channel Architecture (MCA). Dell, which announced and then canned an MCA-based prototype, claimed it sees little customer desire to buy MCA compatibles.

The \$8,000 I486 unit, which is scheduled to ship in May, is aimed at cost-conscious power users. In contrast, Compaq Computer Corp.'s base price for its 486 offering is \$14,000.

Setting sail with 386SX

This week, Dell also plans to become one of the first vendors to ship a PC with the new Intel 20-MHz 80386SX chip, which is 25% faster than the 16-MHz version. Dell said its four-member 386SX family is now outselling its Intel 80286-based line.

Dell also plans to announce bundled 386 and 486 systems featuring AT&T Unix System V Version 3.2 and the Uniplex, Inc. office automation package. The discounted software will be pre-loaded on the PC's hard disk, saving up to five hours of loading and configuring time, Dell said.

However, Dell's earnings report released last week may overshadow the product news.

The firm's fiscal year 1990 profit of \$5.1 million was down 65% from the previous year's figure, though revenue was up 51% to \$388.6 million. Dell watchers expected the profit falloff [CW, March 12], attributing it in part to costly research and development projects.

Dell recently shelved one R&D effort that focused on RISC technology. "We thought there would be more demand [by Dell customers] for RISC by now," a Dell spokesman said.

Dell may have made the right choice in holding off. At least one Dell user said he doubts Dell customers are ready to buy RISC from the mail-order company. "People going that route are looking to Sun [Microsystems, Inc.] and IBM," said Duane Burris, information systems manager at Mardian Construction Co. in Phoenix. "I question whether it really makes sense for them from a marketing standpoint."

Dell has taken some knocks lately for its lack of market responsiveness. "The Dell of recent vintage has taken the approach of 'maybe the customer will like what we have,'" charged Stan Seitz, former Dell

vice-president of manufacturing. Seitz said he left the firm last year over a disagreement on R&D direction.

Observers also questioned Dell's ability to compete with larger firms like Compaq and IBM. "Dell has never been technology-driven; their strength is as a marketing firm," said Eric Zimits, an analyst at Rauscher Pierce Refsnes in Dallas.

Earlier this month, Dell also announced that President and Chief Operating Officer E. Lee Walker would leave his posts to serve a less-active role as vice-chairman of the board. The change was prompted by Walker's serious, surgery-related back problems, Dell said.

The loss of the 48-year-old Walker's experience will be substantial, especially since Chief Executive Officer Michael Dell is only half his age, analysts noted.

"Lee brings a lot to the table," said Michael Davis, an analyst at Lovett Underwood Neuhaus & Webb in Houston.



Dell System 425E

On a brighter note...

Dell's weak earnings report was offset by its announcement of two high-end systems

	Dell System 425E	Dell System 320LX
Processor	I486, 25-MHz	80386SX, 20-MHz
I/O bus	EISA	AT
Graphics	VGA	VGA
RAM	4M to 16M bytes	1M to 16M bytes
Hard disk	80M to 650M bytes	40M to 650M bytes
Operating system	DOS, OS/2 or Unix	DOS, OS/2 or Unix
Price	\$7,899 to \$12,499	\$2,899 base

Source: Dell Computer Corp.

CW Chart: Marie Haines

Four 386-based PS/2s scheduled from IBM

BY PATRICIA KEEFE
CW STAFF

NEW YORK — IBM is expected to take the wraps off four Intel Corp. 80386-based Personal System/2 Model 80s during an announcement here tomorrow but will hold off on a series of I486-based "Systempro killers," targeted at Compaq Computer Corp., sources said.

IBM did demonstrate some I486-based products at Networld in Boston last month, including the "superserver," which featured the Micro Channel Architecture bus. A busmaster card and network software

are still under development. IBM is also said to be working on a three-processor multiprocessor Model 80.

There are also some reports that IBM will release the next version of OS/2 Extended Edition, although it is not known whether the company will provide details on its November 1989 promise to unbundle the new version.

IBM will also unwrap a new DOS with a new memory management scheme; a scaled-down companion to its Model 70 portable, priced under \$6,000; two 386SX Model 65s; a laser printer for under \$1,500; and a 14-in.

enhanced IBM Video Graphics Array display, according to sources who had been briefed.

A small computer systems interface (SCSI) drive theme is repeated throughout the new products. IBM has also taken pains to extend memory and will offer hard disk storage ranging from 60M to 320M bytes.

The 16-bit PS/2 Model 80 tower, which is said to be slower than the Model 70, reportedly will be replaced with a 33-MHz 386-based tower featuring eight 32-bit slots, 64M bytes of memory and an SCSI board said to support a string of disk drives, adding up to 600M bytes of storage.

Users reportedly will have their choice of either a 16MHz or 25MHz Model 65. The predominantly 386-based line up also serves to fill out IBM's 386 product family.

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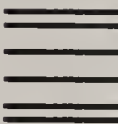
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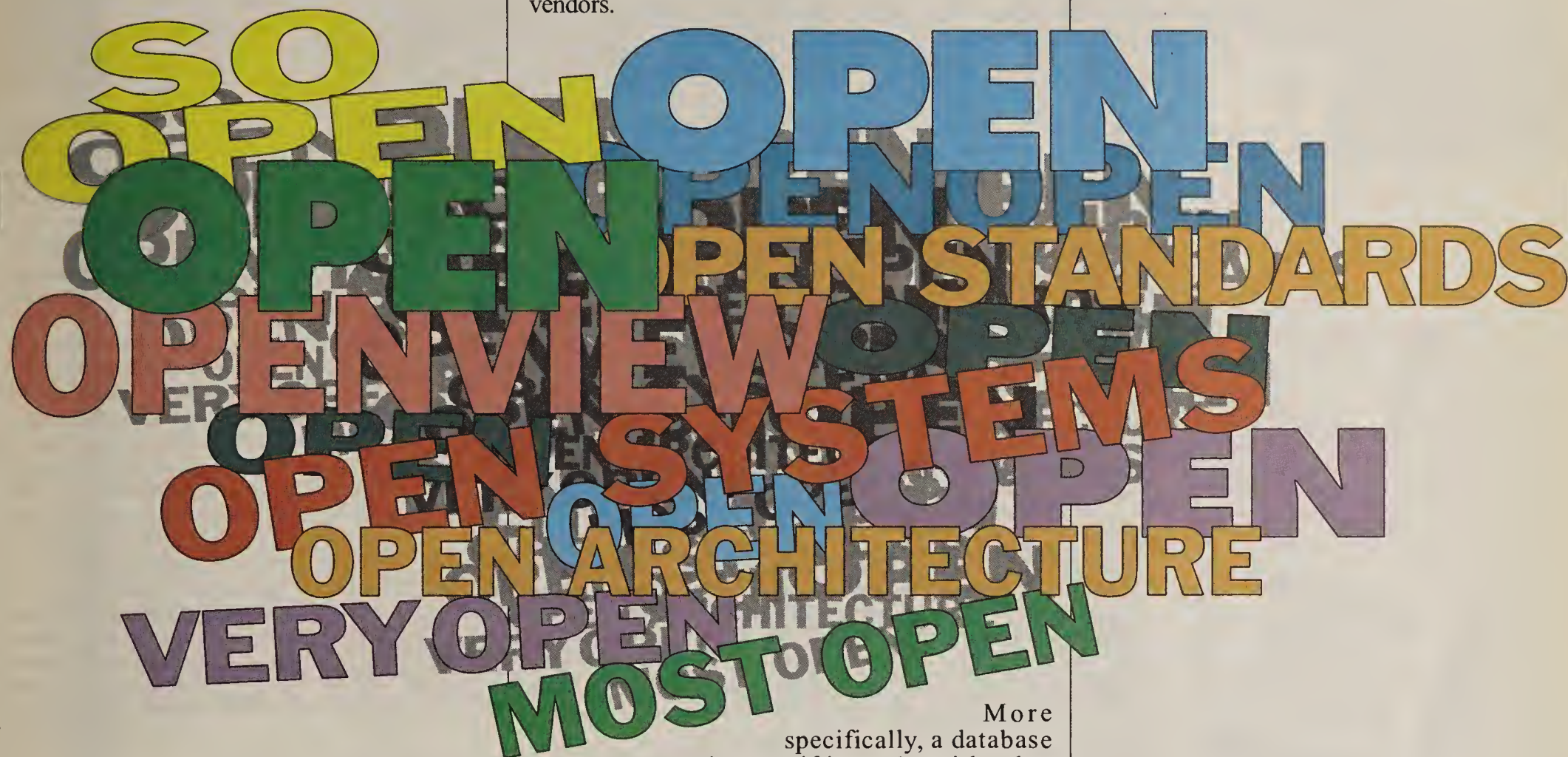


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Users waiting on a single Masterpiece

BY ROBERT MORAN
CW STAFF

NEW ORLEANS — Users are taking a wait-and-see attitude on Computer Associates International, Inc.'s ambitious two-stage plan to merge its diverse financial software products by

next year into a single set that spans mainframe and midrange computers.

At the Masterpiece User Group conference held last week, CA announced that CA-Masterpiece 2.0 for IBM mainframe, Application System/400 and System/38 platforms will be

generally available in the next few months. Further, CA said that Masterpiece 2.0 will serve as the initial stage for migration to the fully integrated Masterpiece 3.0 system.

That version will bring in non-IBM platforms and enter beta testing during 1991. All the plat-

forms will then share the same presentation management, common services and query and reporting tools, CA said.

According to Gary Layton, CA vice-president of marketing for the Financial Products Group, "Masterpiece 3.0 will complete the metamorphosis of Masterpiece."

Layton said it will integrate the existing Masterpiece/Ad-

vanced Business Solutions (ABS) applications as well as Masterpiece General Ledger, Accounts Receivable, Accounts Payable and Purchasing software for IBM mainframes. New versions will also be released for the IBM AS/400 and System/38, Digital Equipment Corp. VAX, Unisys Corp., Data General Corp. and International Computers Ltd. computers.

In Masterpiece 2.0, ABS will serve as the underpinning for all modules except Masterpiece General Ledger and Fixed Assets, which were acquired in 1986 from Software International, Inc.

Ben Bernstein, project leader at Orion Pictures Corp. in New York and a user of CA's ABS Inventory Control and Accounts Receivable, said conversion costs to Masterpiece 3.0 "would not be an issue if Masterpiece 3.0 truly delivers the ease of use and integration."

Several users, however, said nothing within Masterpiece 2.0 would encourage them to upgrade and they would wait for incentive from Masterpiece 3.0.

"There is no way that we will move to Masterpiece 2.0," said Joseph Gelliber, an in-house consultant at McGraw-Hill, Inc. in New York. "Masterpiece 2.0 is really for small companies."

He added that he would examine the merits of Masterpiece 3.0 when it became available but doubted CA would have it ready by the first quarter of 1991 because of missed shipment dates in the past.

Gelliber said that he would not immediately upgrade to 3.0 when it is first released because "we won't be a guinea pig."

Similarly, Ralph Warley, manager of accounts payable at Uniroyal Goodrich Tire Co. in Akron, Ohio, a user of CA-Accounts Payable, said, "We'll wait at least a year [after 3.0 ships] until the bugs are out."

One East Coast-based IS director, who did not wish to be identified, added, "[Users] bought ABS General Ledger because it was simpler and smaller than the Masterpiece General Ledger."

CA's announcement of broader file support last week squelched some user concerns. Stephen Taylor, an application programming manager at Madison County Government information systems operations in Edwardsville, Ill., said CA's announcement that Masterpiece will support VSAM files will ease his worries about moving to Masterpiece 2.0 or 3.0, which are based on a subset of CA-Datcom/DB. CA also announced support for IBM's DB/2.

VAX user Elizabeth Holmes, accounting systems coordinator at J. G. Boswell Co. in Los Angeles, said that she "awaited Masterpiece 3.0's enhanced features and improved performance, which will be worth the wait."

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COMPUTER WORLD

Decstation 5000 graphics draw kudos

BY MARYFRAN JOHNSON
CW STAFF

Digital Equipment Corp.'s new batch of Unix-based workstations, slated for a West Coast debut April 3, may finally make the minicomputer company a serious contender in the contentious workstation market.

Customers, software developers and industry analysts familiar with the new Decstation 5000 said DEC is making the grade at last with well-implemented graphics capabilities.

"This machine has more options on it

than the typical product from DEC," said Hank Walker, assistant director of the computer-aided design center at Carnegie Mellon University in Pittsburgh. Much of the system software for the Decstation 5000 was field-tested at CMU, Walker said.

"These new machines will have a full range of graphics options, all the way from simple 2-D up to 3-D and animation capabilities," Walker said. "I think they'll be very well-received in the DEC installed base, and the pricing will be competitive with the other vendors."

At least three versions of the reduced

instruction set computing (RISC) workstation, which is based on the Mips Computer Systems, Inc. 25-MHz R3000 chip, will be introduced in a price range from \$18,000 to \$50,000. The machine will run Ultrix, DEC's version of the Unix operating system, at a performance rate of 24 million instructions per second (MIPS).

"In price/performance and graphics capability, this is a machine that certainly allows DEC to compete with IBM in the engineering environment," said Robert Herwick, an analyst at Hambrecht & Quist, Inc. "DEC is not only playing

catch-up in workstations, but it had a lot of catching up to do in the graphics area. This puts them close to caught up."

Yet Herwick and other analysts are categorizing DEC's new workstations and the recently announced IBM RISC System/6000 line as a defensive move by both companies. "The real issue is keeping Sun and Silicon Graphics out," Herwick said. "Both IBM and DEC are trying to be good enough to keep loyal customers loyal — not to win new business."

Improvements in the raw performance of the machine may actually matter less to DEC users than the graphics, which were widely regarded as poor on its first-generation Unix workstations, the Decstations 2100 and 3100.

"People are so visually oriented now. Even a marginal improvement in graphics really does make a difference to users — particularly if it doesn't require changing the software that drives it," said Earl Sacerdoti, president of Copernican Group, an IS consulting firm in San Francisco.

Then again, the plethora of workstation options is fast becoming overwhelming, said Richard Harrison, director of clinical information systems at the Dana Farber Cancer Institute in Boston.

"Do we need one more glitzy feature?" Harrison asked. "I'm sure whatever DEC has, we'll be interested in it. The question is, do we need it?"

As the workstation wars rage, new products leapfrog the previous ones in power, performance or options. "One of the things that does to buyers is make them less reactive to price/performance kickers," said Robert Cameron, an analyst at Dataquest, Inc. "What becomes important is the value-added differentiators such as available software, service and support and the ability to distribute power across a network."



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BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — U.S. Sprint Communications Co. last week announced a series of international deals, including a preliminary agreement to form a joint-venture company in the Soviet Union to bring data communications to Moscow.

The company, called Telenet USSR, will operate a packet-switching center in Moscow interconnected with Sprint's international data network, provide electronic mail service and sell data communications equipment to Soviet corporations.

Paolo Guidi, president of Sprint International, a Reston, Va.-based subsidiary of U.S. Sprint, said the joint venture would serve domestic users as well as multinational customers seeking a reliable link to Moscow.

Guidi acknowledged that the Soviet market "may not materialize immediately" but said he expects the business to grow as more personal computers are installed there and as communications related to East-West trade increases.

Negotiations about financial details and business plans will be completed in mid-1990, and the switching center is expected to be operational by the end of the year, Guidi said at a press conference.

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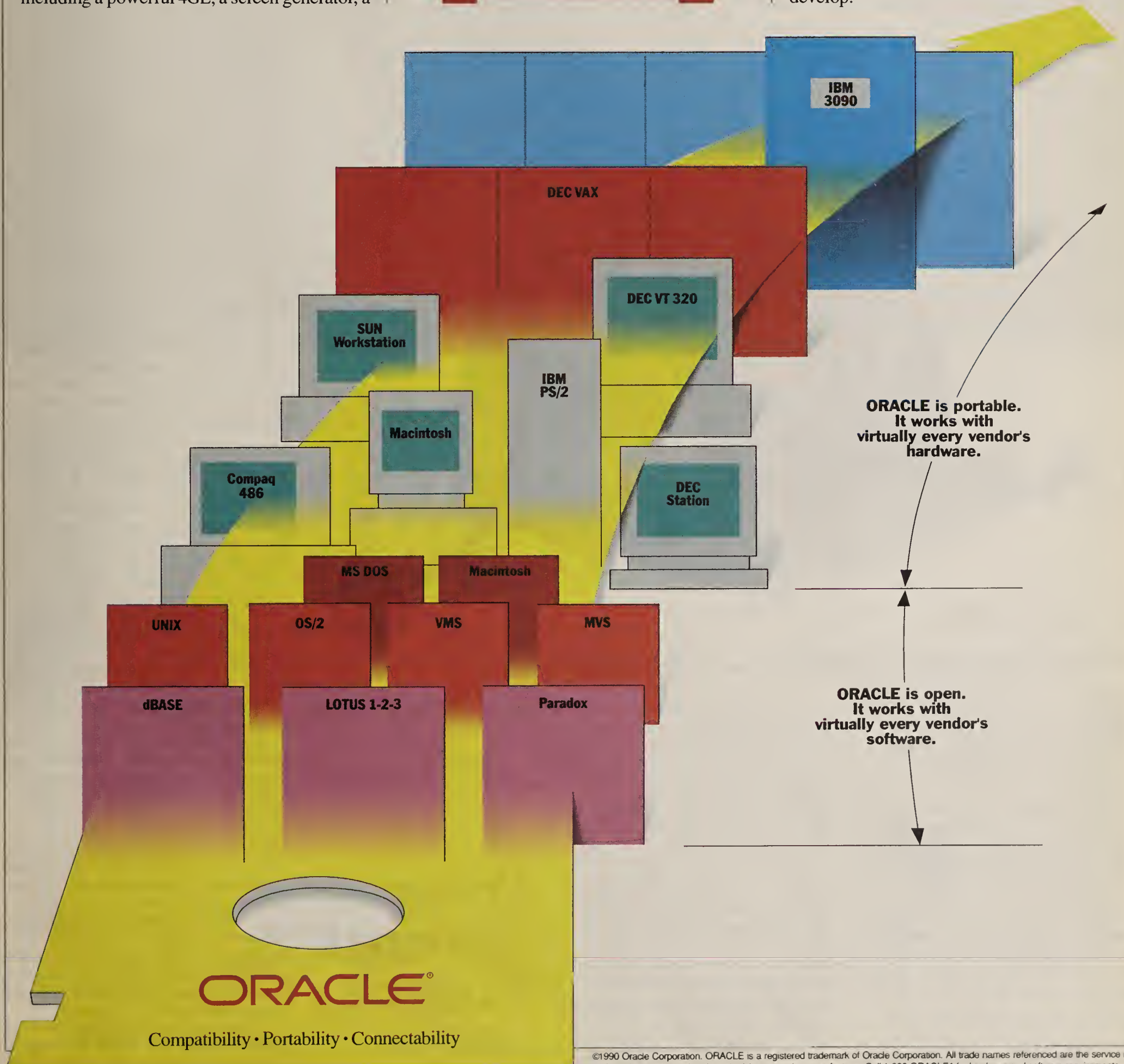
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Storage server aimed at VAXs

WESTBORO, Mass. — Epoch Systems, Inc. announced last week that its Epoch-1 Infinite Storage Server is now available to Digital Equipment Corp. VAX/VMS and Ultrix users through a joint marketing venture that provides DEC customers with the necessary storage software link from TGV, Inc.

For VAX users who are adding 4G bytes of storage or more to their systems, Epoch can provide a cheaper alternative to buying increasing numbers of Winchester disks each year, Epoch officials said. This is the first product enabling VAX users to access the Epoch-1 system.

Epoch sells network storage manage-

ment systems for high-performance workstations. The servers, which are Network File System (NFS) and Transmission Control Protocol/Internet Protocol-compatible, are intended to provide central data storage and system backup for fast, transparent on-line access to high-capacity disk storage over Ethernet.

TGV, based in Santa Cruz, Calif., manufactures and markets standards-based networking and applications software for DEC VAXs. The alliance with Epoch brings TGV's Multinet NFS Client software into the picture, enabling the connection between DEC machines and Epoch servers.

Stopgap

CONTINUED FROM PAGE 1

particularly government, manufacturing and military organizations whose Transmission Control Protocol/Internet Protocol (TCP/IP) networks were the protocol's original management targets.

Users' adoption of SNMP has in turn caused leading vendors such as Hewlett-Packard Co., Sun Microsystems, Inc. and IBM to support and enhance the protocol, making it that much more viable to users. No one can predict when or even if this spiral will end.

The existence of an increasingly viable de facto network management standard has apparently taken the heat off users

who are impatiently waiting for CMIP to finally arrive. Several organizations said they definitely intend to migrate to OSI sometime in the future but were vague as to exactly when they would do it.

The National Science Foundation, for example, is "talking about future OSI" migration for its high-speed backbone, NSFnet, "but not much in the context of network management right now," said Hans-Werner Braun, a spokesman for NSFnet implementor Merit, Inc. "We have been concentrating on managing the TCP/IP network" by means of an SNMP-based system from IBM, he added.

SNMP will account for only \$20 million out of a total 1990 network management market estimated at \$1.5 billion, predicted a recent study by International Resource Development, Inc., in New Canaan, Conn.

However, that could grow to as much as \$100 million out of a market of about \$2.2 billion by 1993, IRD consultant Kenneth Bosomworth said.

SNMP's long-term viability remains questionable because it is too "simple" a protocol to handle the sophisticated management requirements of a corporate-wide network, Bosomworth said.

However, Lynch suggested that SNMP could win a long-term niche as "the foot soldier of network management that collects statistics and then passes them off to the CMIP supermanager station." IBM and DEC have announced that their own management platforms, Netview and DECMCC Director, will be able to play "supermanager" to SNMP systems.

New uses

Users, too, are creating long-term — and not necessarily second-string — roles for SNMP. NASA's Lewis Research Center, for example, is using Sun's Sunnet Manager, an SNMP-compatible system, to monitor a variety of bridges and routers as well as basic host operations, according to Gary Stewart, a systems engineer at NASA contractor Sverdrup Technology, Inc.

Sun's product, which began commercial shipments last week, "is open enough so that we can port our own applications" to provide functionality and device support "until the industry comes out with something," Stewart said.

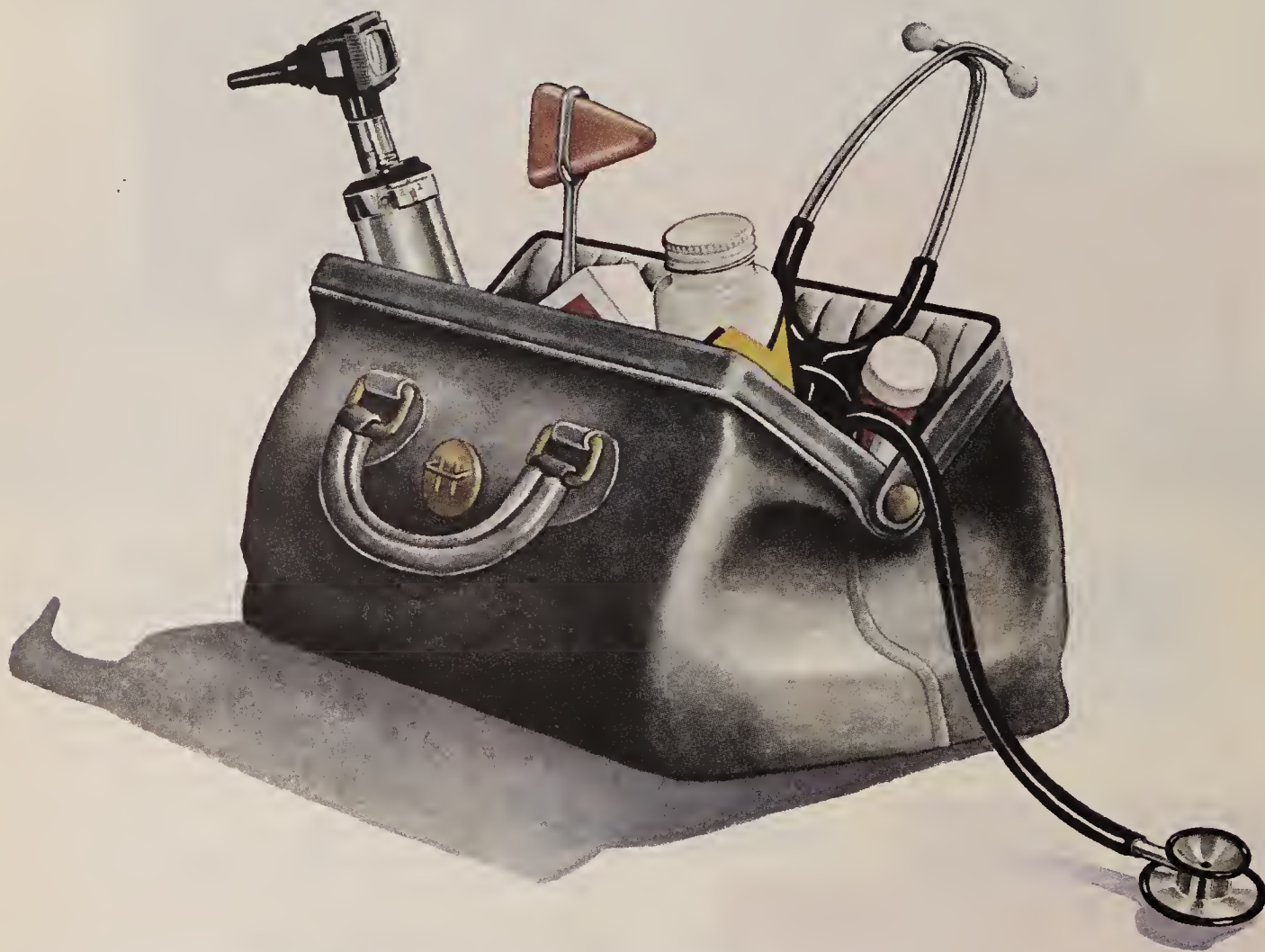
Hughes Aircraft Co. is checking out SNMP systems as a way to economize on management resources by allowing one workstation to handle multiple vendors' devices, according to Tom Nakamura, the firm's product manager for engineering design networks.

Calling the idea of centralized network management idealistic, Nakamura said that SNMP and OSI might eventually divide the management of his company's network.

The ease with which users can move between SNMP and OSI will depend greatly on the products they buy now, sources said. Some current SNMP products are said to provide no path to OSI at all. On the other hand, Sun, HP and Cabletron Systems, Inc. have announced "protocol-independent" workstations that will eventually support SNMP, OSI and other popular network management systems, the vendors claimed.

Increasing vendor commitment to SNMP should also result in enhancements that will make it easier for the protocol to interoperate with CMIP, Lynch said.

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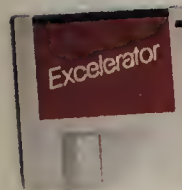
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ADVANCED TECHNOLOGY

TECH TALK

The U.S. can substantially reduce the billions of dollars necessary to clean its chemical and nuclear waste sites if robots do the job, according to William Whittaker, who heads the field robotics center at Carnegie Mellon University. "The necessary technologies have reached a point where we can begin to put together integrated, teleoperated and semiautonomous systems for this purpose," he says. The R&D effort would be a fraction of the cleanup costs, and the technology could be used in a wide range of commercial applications, according to Whittaker.

Zippping along at 1.5 billion floating-point operations per second? If so, Cray Research, Inc. wants to hear about it. The company is currently accepting entries for its 1990 Gigaflop Performance Awards, which will recognize computational researchers who are doing significant work on Cray supercomputers at speeds at or above 1.5G FLOPS. Entries for the program are being accepted through Sept. 1. A panel of Cray Research scientists and engineers will review each entry, and awards will be presented during the Supercomputing '90 conference in New York from Nov. 12 to 16. Contact any Cray sales office to receive entry forms.

C-Cube Microsystems, Inc., introduced what it says is the first single-chip image compression processor that enables desktop computers, communications equipment and consumer electronics products to exploit the potential of multimedia applications. C-Cube's CL550 processor compresses still images or motion video by a factor of 20 without visible degradation in quality, the company says. The chip can compress and decompress a standard-size color photograph in less than one second and motion video in real time, or 30 frames per second. It is scheduled to become available in June, according to the company.

Welcome new displays on the block

Although the market for flat-panel display has great potential, foreign competition is stiff

BY MICHAEL ALEXANDER
CW STAFF

Unless you have cruised at 30,000 feet in an F-16, you might not have a ready appreciation for a flat-panel display. But the makers of such displays say that in the ambient light at high altitudes, the displays are sharper and easier to view than ordinary tube screens.

Now there are entire industries in the U.S. and abroad that are banking on the fact that the rest of us will also want crisper pictures in everything from laptop computers to large, flat TV sets that hang on our walls like pictures.

The market for flat-panel displays "has the potential of growing into an industry the same size as the semiconductor industry, perhaps even bigger," said Peter Brody, who invented active-matrix LCDs 20 years ago and is now president of Magnascreen, Inc. in Pittsburgh. "It will replace the cathode ray tube and also give rise to a plethora of new applications."

Of the five or so competing technologies in the flat-panel display market, the three most widely manufactured are active-matrix LCD, plasma and electroluminescence (see story below).

Display's the thing

The display is the pivot point on which all other technologies will revolve, said Peter Friedman, president and director of Photonics Imaging, Inc. in Northwood, Ohio: "If the display comes from Japan, then all of the electronics on the back of it will also come from Japan."

U.S. electronics companies are concerned that if they cede development of flat-panel displays to Japan and Europe, it will also mean having to give in to the competition for computers and wide variety of other products that make use of displays.

Photonics manufactures a 60-in. (measured diagonally) monochrome

plasma display, the largest size now available. The display, with its resolution of 4 million pixels per inch, is 20 times sharper than a standard TV set and is widely considered to be among the best of its kind. The Department of Defense, the company's largest customer, has installed the monochrome displays in weapons control systems and will be among the first customers of a 50-in. color display slated to debut this year.

The biggest and brightest of the active matrix LCD screens available measure 14 in. on a diagonal, large enough for a laptop computer but far smaller than what the future will demand. Brody said his company has hit on a way to make a 50-in. active matrix LCD but lacks funding to produce it.

Without government funding beyond the \$30 million that the Pentagon's Defense Advanced Research

Projects Agency plans to invest in flat-panel technology, U.S. display development efforts are bound to falter, Brody said.

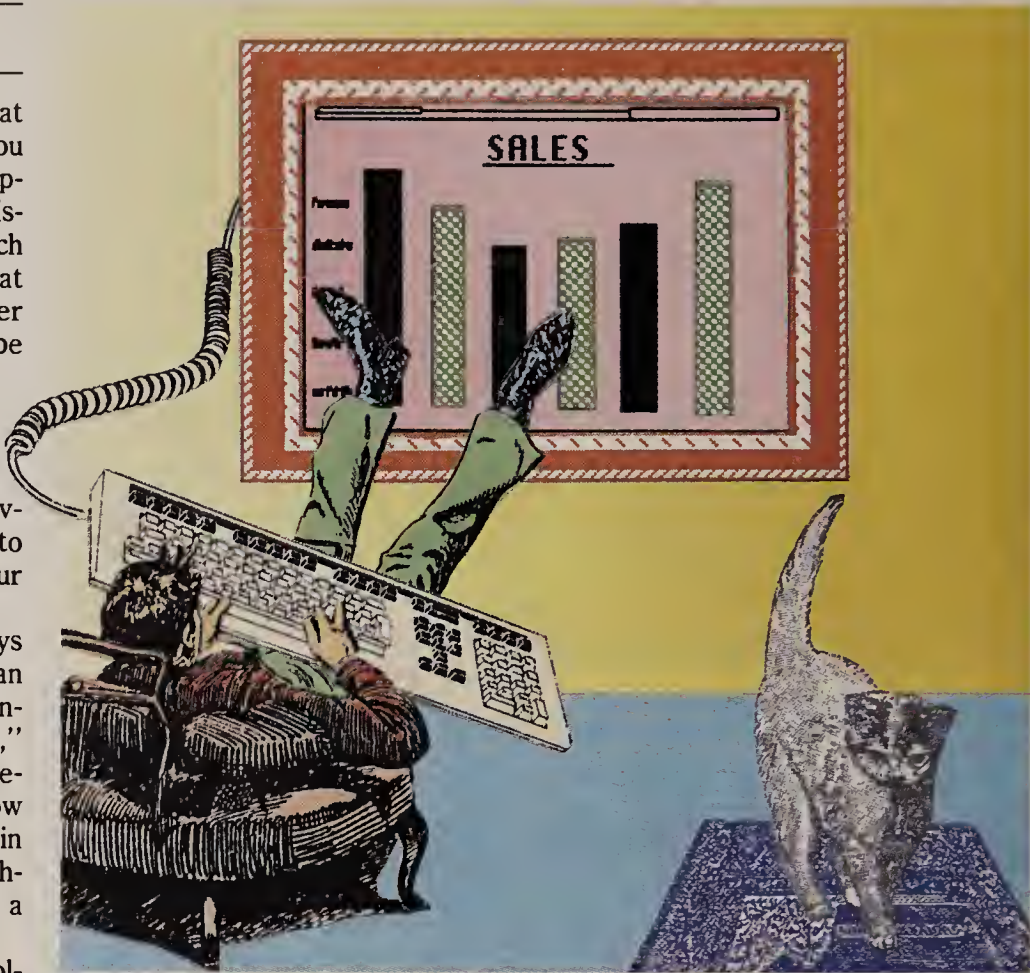
While all three competing technologies were invented here, the Japanese hold a huge — perhaps unsurmountable — lead in the \$3.8 billion worldwide market. The U.S. manufactures only a fraction of the flat screens sold, according to Stanford Resources, a San Jose, Calif., market research company.

However, even with government funding, the U.S. may already be too far behind to catch up. Several Japanese firms are ramping up production of active matrix LCD displays for pocket TVs, laptop computers and other products, according to a report compiled by analysts at Prudential-Bache Securities, Inc.

In fiscal year 1990, more than 10 companies will spend nearly \$700 million to boost their production capacity, Prudential-Bache said. That amount may grow to nearly \$3 billion per year in only a few years, even though none of the ventures will be profitable for at least a few more years.

Some U.S. vendors are mulling over a consortium to design and produce flat-panel displays based on technology developed by the David Sarnoff Research Center in Princeton, N.J.

A spokeswoman for the Sarnoff Center confirmed that the lab was having discussions with at least five companies as part of its client-sponsored research program but declined to say more than that. "We expect to be able to announce some sort of arrangement later this year," she said.



Marc Yankus

Three's not a crowd

The three most popular flat-panel display technologies are the following:

- **Active-matrix liquid crystal.** The display, which is used on many laptop computers, consists of two sheets of polarizing material with a layer of liquid crystal solution sandwiched between them. Active matrix designs have a transistor for each pixel; when the transistor is turned on, it causes the crystal to twist, allowing light to shine through.
- **Plasma.** When an electric current is applied to a pixel, the pixel in turn causes a gas to glow. Light emitted by the gas triggers phosphor painted on the back of the screen to also glow.
- **Electroluminescence.** Images are created by passing a current through a layer of phosphor, causing each pixel to glow.

MICHAEL ALEXANDER

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ACCESS: Create Descriptor
Locals Globals Help

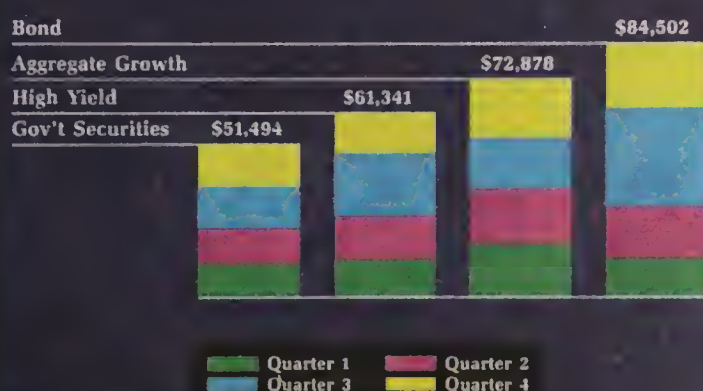
DB2 View Descriptor Display Window

Descriptor: Library: DBACCESS Member: FINANCE Type: VIEW
Output SAS Data Set: Library: Member:

Authorization ID: MKTSEM Table Name: FINANCE SSID: DB2

Func	Seq	Column Name	SAS Name	Format
-	0	YEAR	YEAR	\$4.
-	0	FUNDS	FUNDS	\$24.
-	-	JANUARY		14.2
-	-	FEBRUARY		14.2
-	-	MARCH		14.2
-	-	APRIL		14.2
-	-	MAY		14.2
-	-	JUNE		14.2
-	-	JULY		14.2
-	-	AUGUST		14.2
-	-	SEPT		14.2
-	-	OCTOBER		14.2
-	-	NOVEMBER		14.2
-	-	DECEMBER		14.2
-	-	QUARTER1	QUARTER1	14.2
-	-	QUARTER2	QUARTER2	14.2
-	-	QUARTER3	QUARTER3	14.2
-	-	QUARTER4	QUARTER4	14.2
-	-	TOTAL	TOTAL	14.2

Quarterly Investment Returns



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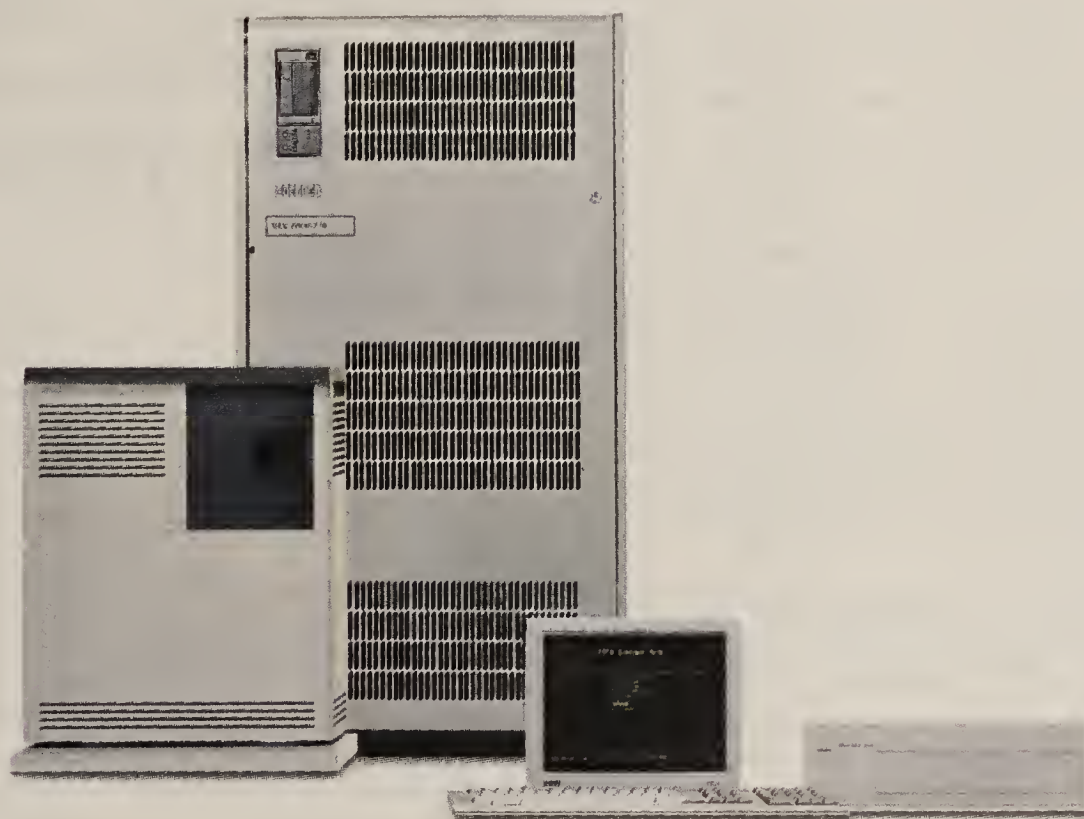
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are recorded in a temporary file. If the system is interrupted, you can use the journal file to update your database to its correct state.

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EDITORIAL

A's and B's

A FEW MONTHS BACK, we approached the Society of Information Management with a request to present the findings of a *Computerworld* study on the attitudes of user department managers toward information systems at its annual Institutional Member Conference.

At first, the conference organizers were wary, and arguably for good reason. After all, what but bad news could one expect when asking IS clients for a performance review?

However, the Society complied with the request, feeling that whether the news was good or bad, the important thing was to put an accurate gauge on the relationship between IS and its client base. So we presented the results to the Society's biggest members last Friday and do so for you in today's issue (see story page 1).

In some ways, the news is almost too good to be true, but rest assured it is. All told, we surveyed 515 managers — mostly vice-presidents — of discrete user departments (marketing, sales, engineering, etc.), including more than 130 whose surveys were completed by telephone. Bear in mind that these are not "end users" banging away on a spreadsheet or processing reports. These are the department managers who interface most directly with IS and contract for IS services.

To encapsulate the major findings: The relationship between the two camps is seen as improving; the need for IS services is widely seen as increasing over the next two years; IS generally responds effectively to user department needs; and IS is strongly viewed as *the* key to competitive advantage in the 1990s.

If this last finding has a familiar ring, it is because the same strong sentiment was expressed last year when we polled over 100 CEOs and other senior corporate managers from the Fortune 1,000.

With all this good news and so much more, as our story today reveals, why would most people likely expect different, less positive results?

The answer lies in some of the contradictions noted in the survey results. For example, while the department managers sensed that IS generally takes good care of their needs, a quarter of those polled didn't feel their company gets its money's worth for its IS outlays, and nearly another quarter simply didn't know.

Furthermore, fully half the respondents felt they did not have adequate involvement in long-term IS planning.

Reading between the lines here and stealing a phrase from *Cool Hand Luke*, what we've got here is a failure to communicate — at least very effectively. IS has to find creative ways of proving the value of its services, lest it drive end users to seek other alternatives. With the relative computer literacy and planning acumen of today's department managers, there is no good excuse for not including them as a major component of the IS planning.

But overall, you've got to like what you see.



LETTERS TO THE EDITOR

Ah, begorrah

Turnabout is fair play, so here is our response to your most creative editorial [CW, March 5]:

"Contrary to what you imply,
Our audits aren't bad and here's why,
We could just get tough
Go to court and be rough
But we'd rather meet eye to eye.

Some software's expensive, for sure
But stealing the stuff's not a cure
You say we are greedy
Are these pirates so needy
That we should sit back and endure?

Fighting piracy isn't a game
Our losses we just want to tame
While they steal all our goods
You call us big hoods
And this we really find a shame.

The penalties paid go to fight
For a principle we think is right
Software's not free
So why can't you see
The audit idea's pretty bright!"

As ever, it is a pleasure working with you.

Ken Wasch
Executive Director
Software Publishers
Association
Washington, D.C.

The new frontier

In Anne M. Stone's letter to the editor [CW, Jan. 15], she said, "Women are projected to account for more than 60% of the labor force growth between 1986 and 2000" and "Based on the demographics of the years ahead, women will not be at home, but in the workplace."

Supposedly, the large per-

centage of "working women" includes all women working even one week a year — for example, working at the post office during the Christmas rush. I wonder if the numbers bandied about are not a little misleading, because they would probably include me. Although I live in Epsom, N.H., I have decided to stay home, take care of my 2-year-old and work as a telecommuting programmer 15 to 20 hours a week.

There are many more options in this technological culture than driving three hours to work and working eight-plus hours. I see flexibility and benefits for both the company and the "home worker." There are a bunch of us blending the two worlds together, and that will contribute to the "demographics of the years ahead." Many women will be at the workplace, but the workplace will be their home.

Sherry Yeaton
Epsom, N.H.

Need for vigilance

In the article, "A network security primer" [CW, Jan. 29] by William Stallings, there were a few inaccuracies.

Stallings states that fiber-optic lines are not vulnerable to inductive taps. This is not accurate. There are some methods which involve bending the fiber-optic line that result in the ability to intercept or read the transmissions. I won't elaborate as to the details of how this is accomplished, but it is a viable threat.

The countermeasure to this threat is to transmit a closed loop signal and measure and monitor its attenuation. If the attenuation level varies more than a predetermined amount that would occur when bending the fiber, then that communication path is

shutdown. There are some commercially available systems that provide this protection.

Regarding digital signatures, Stallings leaves the impression that they are an accepted authentication method. The reality is that a digital signature is an issue that has not been resolved in our legal system. There is some concern that if a digital signature were contested in court, it may be very difficult in legal terms to prove that something was "signed." Even the Internal Revenue Service requires a "handwritten" signature if you submit your tax return electronically.

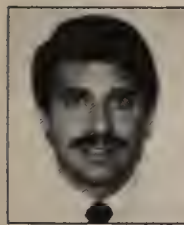
Overall, Stallings' article was informative; however, I feel a more appropriate sentiment concerning network security would be "constant vigilance." This is a key point frequently lost on upper management. They shouldn't feel secure just because they have fancy "bells and whistles." The hardware and software safeguards for these systems mean nothing if there isn't someone dedicated to monitoring the system. I can't overemphasize the word dedicated: For someone to properly administer a system, they must be able to devote their full attention to preserving its integrity.

Fred H. Hronicek
ADP Security Manager
Ultradefense Systems
El Segundo, Calif.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931; MCI Mail: COMPUTERWORLD.

A pox on tax-help programs

MICHAEL COHN



There are probably a lot of good things you can do with \$19.95. You can buy a three-record set of the greatest accordion hits of all time. Or you can order an arsenal of steak knives that can cut through tin cans, cinder blocks or living-room upholstery. However, I recently chose not to make such wise purchases. Instead, I bought a personal computer software package that costs not thousands of dollars, not hundreds of dollars, not even \$50 but only \$19.95, yes \$19.95... Tax in the Box.

I am fed up with taxes, like everyone else. I'm tired of spending my weekends in March and April trying to find the little piles of receipts and forms that I probably threw out by accident, anyway. So how could I resist Tax in the Box at \$19.95? The computer store's display rack showed a nice man in a sweater sitting next to his PC. He was licking an envelope addressed to the Internal Revenue Service while looking down at his still-shrink-wrapped version of Tax in the Box. Heck, you didn't even have to open it! In the background, it looked like his wife was bringing him a plate of cookies. The cookies alone probably run close to

Cohn is a quality assurance representative based in Atlanta.

\$19.95. So despite my relative inexperience with my new home PC, I thought I'd venture a measly \$19.95 on Tax in the Box.

So enchanted was I with the notion of automating my federal income tax return that I even dared some guilt-free procrastination. I fertilized the lawn. I cleaned the gutters. I laughed at the television ads for tax preparation. For I had Tax in the Box, and I was getting a plate of cookies.

Early one April evening, I wandered into the den and tried to remember how to turn on the PC. I waded through the closet for the shopping bag crammed full of forms and receipts. Not to worry, I thought, because all I probably had to do was stuff the papers into an empty disk drive and let Tax in the Box do the rest. I removed the shrink-wrap.

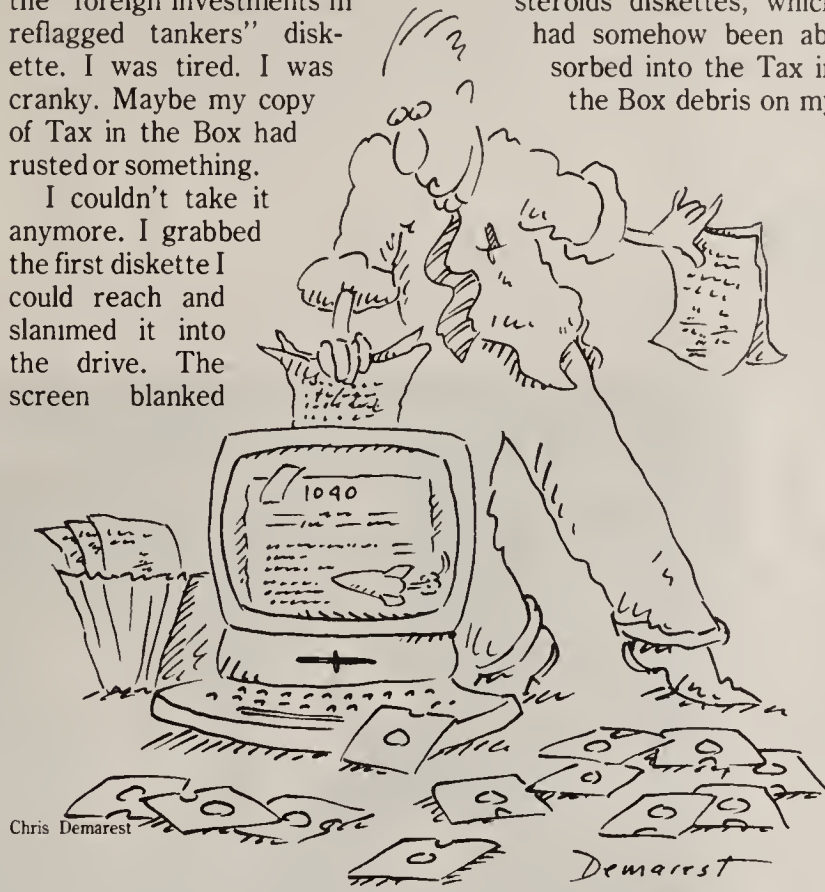
I kind of hoped that \$19.95 bought one diskette and maybe a 10-page manual. But no, Tax in the Box gave me my money's worth. There were no fewer than 11 different diskettes, three manuals and one 30-page worksheet. You could barely buy 11 blank diskettes for \$19.95! I sure had a bargain with Tax in the Box.

Forty-five minutes later, I was only on page two of the worksheet. Three times already I had accidentally inserted the Schedule C diskette into the drive that expected the Schedule D diskette, and in the mean time I had lost the Worksheet 6 diskette and had unsuccessfully tried

to fool Tax in the Box by sticking the Worksheet 9 diskette in upside-down.

By midnight, I was starting to panic. The shopping bag was spilled all over the floor. I had every diskette my family owned sprawled across the desk. The screen was making this annoying beeping noise and asking for the "foreign investments in reflagged tankers" diskette. I was tired. I was cranky. Maybe my copy of Tax in the Box had rusted or something.

I couldn't take it anymore. I grabbed the first diskette I could reach and slamed it into the drive. The screen blanked



out for 10 seconds, then something strange happened. A 1040 form appeared on the screen. It had my name and address. It had numbers all lined up in the right-hand column. It had totals. However, it also had something I

didn't expect.

What looked very much like a little spaceship was hovering around my subtotal of dependent deductions. At first, I thought it was a cursor or something. But Tax in the Box was not expecting the little alien, which suddenly blasted a laser into three digits of my social security number.

I yanked the diskette out of the drive, realizing that I had just made a horrible mistake. This was one of my son's Spacesteroids diskettes, which had somehow been absorbed into the Tax in the Box debris on my

desk. I tried in vain to stop the galactic visitor by rapidly inserting several Tax in the Box diskettes into the drive (even three or four at a time), but it was too late. The spaceship had wiped out my gross adjusted income

and was heading for Schedule B, racking up points for every exploding line item.

Fortunately, somewhere in the vicinity of my capital gains distributions, a bigger spaceship showed up. It didn't fire as many lasers as the little spaceship, but the little spaceship definitely was afraid of it and tried to hide somewhere in Schedule A. Seconds later, the big spaceship cornered its counterpart above my moving expenses, fired a salvo and scored a direct hit. The little spaceship disappeared; there was a bit of electronic musical fanfare; and the PC went quiet.

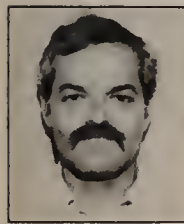
I sat there stunned for a moment, waiting for Tax in the Box to re-emerge. However, after several minutes, nothing happened, and around 1 a.m. my wife yelled from upstairs that I'd better come up to bed or she'd do something terrible to me with a handful of W-2s.

The next morning, my wife put all the stuff back in the shopping bag and sent me over to one of those tax preparation offices in a shopping center. Being so close to the 15th, I had to wait three hours before someone would see me. Those tax preparation offices don't have cookies, either, but the lady who helped me did have some butterscotch candies on her desk, although somebody had doused them with white correction fluid.

I understand that the IRS is working on a system so that you can do your taxes on-line and send them electronically to your regional office. Maybe that's a good idea. But unless they come up with a Diskette Reduction Act someday, you can count me out.

Mumford said: Learn to value the miners, not the ore

JEFF ANGUS



If you are responsible for using technology to advance the productivity in an organization, you ought to be reading Lewis Mumford. If you want to be able to use information technology to *change*, not just automate, the way your operation runs, you couldn't find better suggestions than those that Mumford offered.

Lewis Mumford's death in January represented the decimation of a rare species — the multidisciplinary pundit. The 95-year-old Mumford had been the architecture critic for *The New Yorker*, editor of a noted sociology journal, a member of New

Angus is a manager at Farallon Computing, Inc., a manufacturer of Macintosh networking hardware and software in Berkeley, Calif.

York City's board of education and an award-winning author. Still, these accomplishments pale when compared with his comprehension of technology and its effect on business and society.

More than anyone else, he synthesized information from urban planning, sociology and the history of technology to describe the social effects of the automobile age. Because he lived such a long life, he was able to detail the same for the computer age, too. He was prescient, describing the downside of a machine-centered society long before it happened.

His accurate picture of the evolution of information technology preceded by 25 years the Nolan, Norton study detailing the decline of white-collar productivity and increase in blue-collar productivity that coincided with the spread of computers in the workplace. In 1970, he wrote that it was already obvious that the stated promises of infor-

mation technology were not deliverable with the current way of doing business.

"For every manual worker who is eliminated from a craft or thrown off an assembly line," he wrote, "it turns out that a bureaucratic substitute, capable of feeding and nursing the vast cybernetic pseudo-organism that is coming into existence, will be needed. The most sterile form of work possible, 'paperwork,' has increased by leaps and bounds; and the resulting degeneration of responsive and responsible intelligence is equally patent."

Settling for mediocrity

According to Mumford, it is the way information technology has been implemented that has brought down the ability of employees to think on their feet.

"The most serious threat of automation comes in the displacement of the human mind and the insidious undermining of confidence in its ability to make individual judgments that run contrary to the system. The most disastrous result of automation, then, is that its final product is Automated Man; he who takes all his orders from the

system, and who, as scientist, engineer, expert or administrator... cannot conceive of any departure from the system, even in the interest of efficiency."

That sounds like more than one outfit I've worked for in the past. The demand for conformity of action, even conformity that guarantees mediocrity or failure in business, is one of the most noticeable traits of too many large organizations today.

Mumford was also an historian of technology and society. Mumford the historian outlined in *Technics and Civilization* the eras of technology as though they were archaeological: the eotechnic, the paleotechnic and the neotechnic eras.

The ongoing transition to the neotechnic era involves the change from coal to electric power, from sweatshop to information-loaded production. We have not advanced completely into the neotechnic era, even though we have almost all the required tools, because vested interests see it as more useful to do the same things as before. Our progress in using information technology has been limited because of our attachment to past func-

tions and organizational structures — both of which are inefficient users of the new tools. The hierarchical organization that was so successful in managing profitably in the paleotechnic (or Industrial Revolution) era of high-volume standardization is an empty husk when used to make profits in the neotechnic.

Mumford quoted a telling story from a forward-looking mine manager of the paleotechnic era who, "... once asked his auditors what was the most important thing that came out of the mine; and after one had guessed coal and another iron and another gold, he answered: 'No, the most important thing that comes out of the mine is the miner.'"

Businesses that use information technology to change the way business is done rather than just speed it up will more likely win. Those that figure out a way to incorporate the skills and knowledge of their employees into the information management process are the likeliest winners of all. Keep this in mind: It's the miners, not the ore. It's too bad Mumford couldn't have lived another 15 years to see how accurate his vision was.

Rights of working parents

READER'S PLATFORM

MERRILEE WONG

In the Feb. 12 issue of *Computerworld*, you published two responses to Glenn Rifkin's Viewpoint column entitled "It's time to make room for baby" [CW, Dec. 11, 1989]. These readers advised parents with young children to "put one career on hold" and cautioned, "Don't destroy the image of June from *Leave it to Beaver*." I

Wong is a systems analyst based in Minneapolis, Minn.

don't know Glenn Boylan or R. Eddings, but I'm sure they speak for many of the bosses, co-workers, clients and social acquaintances I've encountered since beginning my career in 1976.

So, to the Boylans and Eddingses of the world:

I agree with your concern for the well-being of society, but I abhor your "solutions." I've spent years suffering the consequences of attitudes such as yours. I am provoked to speak out for those of us who pay for child care while we are at work.

Where do you get the idea that we're allowing someone else to raise our chil-

dren? Are the schools raising our school-age children? Not mine! In families where Dad works and Mom stays at home, is Dad no longer a father while he's at work?

I'm a mother 24 hours a day, seven days a week, whether or not I'm with my children. My husband and I have the responsibility of raising our children, and if we choose to allow other people into our children's lives it is our business, not yours.

The belief that women of child-bearing age should stay at home to raise children is just one "social attitude" that has made my life more difficult than necessary. (Even when you say one parent should stay home, most likely it would be the mother because women still statistically earn less money than men.) One of my

bosses gave promotions and raises to the men in the department when they got married or had children, explaining to other people who asked for them that funds were "limited" and the organization couldn't afford raises for everyone! These were during times when more than half of all marriages ended in divorce and the number of women who were single heads-of-household outnumbered men.

To argue that we should "make sacrifices" to stay home for our children's sake is absurd. I made many sacrifices to develop the potential to be a good parent capable of providing for a family. One sacrifice was to wait until age 35 to have a baby. As a parent now, I'm still making plenty of personal sacrifices.

The years I have left are my prime earning years. I can be reasonably sure that returning to a career in the computer industry at age 45 after a 10-year absence would mean starting over in an entry-level position at an entry-level salary (unless corporate attitudes in the U.S. have changed dramatically by then). I am concerned about negating the years I've put into my career to date. Yes, I do work partly for self-actualization, and no, I don't feel guilty about it.

Help, not hindrances

I am exhausted from trying to work around the attitudes of people who control the opportunities! I suggest you stop trying to throw roadblocks in the way of intelligent, family-oriented, career-capable men and women.

Instead, try demanding services that are open after 5 p.m. and on weekends. Try supporting the development of high-quality, affordable day care. Try volunteering at community children's programs. Offer to watch the children of a friend or relative once in a while so the parents can have a moment to relax.

Try offering part-time professional positions and flexible hours adjusted to individual employee needs. Try a "telecomputing" program. Try making at least four weeks vacation time available to everyone, not just long-term or executive employees. Try hiring women who are re-entering the work force in their 40s at positions and salaries comparable with the men of that age in your company. Try offering parental leave — not just maternity leave. Try becoming a partner in providing creative solutions to the child and elderly parent care problems your employees face. Redefine "what it takes to be successful" in a career track to acknowledge that parents face another four to eight hours of work after they leave the workplace.

Some of these ideas may cost something to implement, but I believe the return would be in greater productivity and more satisfied employees.

Society needs a skilled and energetic labor force as well as happy and well-educated youngsters to move into the labor market tomorrow. Society needs its families to be able to support the balance of emotional, physical, intellectual, spiritual and financial needs of each family member. I believe everyone in the U.S. needs to wake up to the fact that its work force isn't made up of Ward Cleavers. In many families today, if June isn't doing it all herself, both Ward and June are working outside the home, and both are contributing equally when they get home.

So stop being part of the problem for working parents and start being part of the solution.

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Your Company
Must Learn To
Thrive Amid
Unprecedented
Change.

As Global Competition Systems Must Change To



Intensifies, Information A Competitive Weapon.

Increasing global competition and growing market expectations are confronting business with accelerating change, change that is reshaping the way businesses operate and compete.

The role of information systems in meeting these business challenges is changing, too, from a service function to a true competitive weapon.

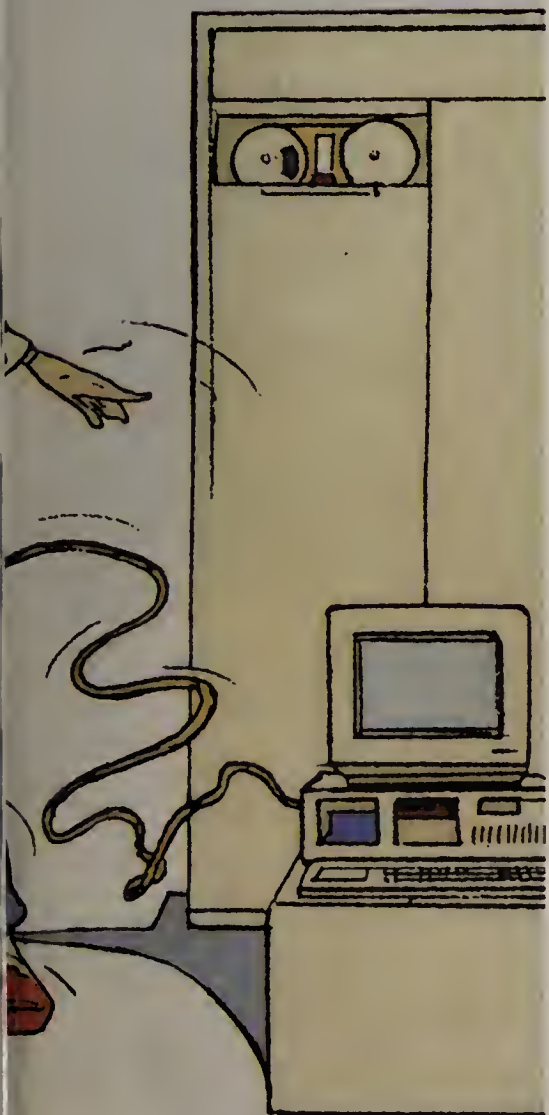
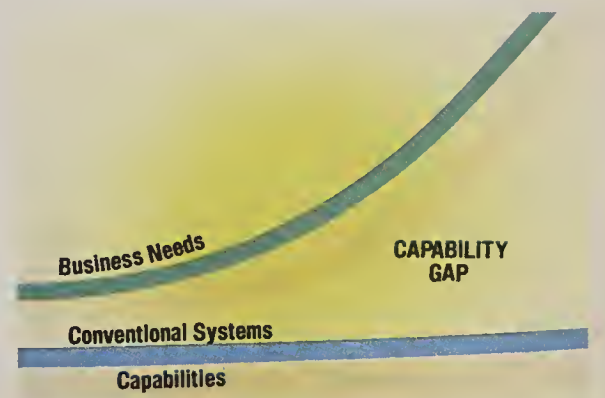
Conventional computing strategies can't provide the capabilities needed for this transition. In fact, the gap between what business needs and what conventional systems can offer is continuing to widen.

Microprocessor-based systems, open networks, and industry-standard software now offer a compelling economic alternative to conventional architectures. But there is a need for a new computing strategy that will transform traditional computing environments.

Such a strategy must deliver several key benefits: An open systems environment that accommodates the widest possible choice of hardware and software.

A powerful and intuitive application environment for transparent access to enterprise-wide information resources.

And a bridge to your current information systems that preserves your present investment in systems, applications, and data.



Closing The Gap Between And What Information



en What Business Needs Systems Can Deliver.

Introducing Open, Cooperative Computing.

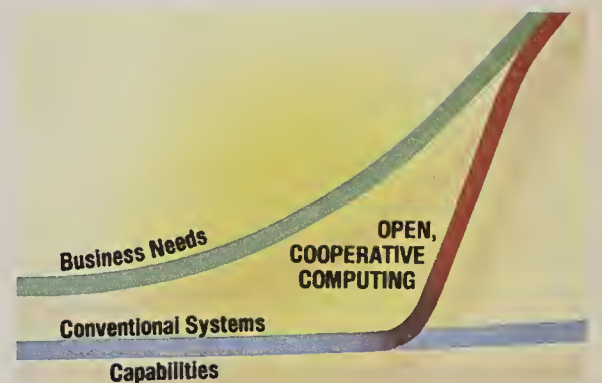
Open, Cooperative Computing allows you to transform the role of information systems. It's an open blueprint that guides you from the conventional architectures of the past to the cooperative environment of the future.

It's a strategy designed to close the gap between what your business needs from information systems and what current systems can provide.

Open, Cooperative Computing integrates industry standards in hardware, software, and networking, to help you achieve greater connectivity and application portability across systems from many different sources.

A line of scalable processors lets you add processing power in smaller, more cost-effective slices. And client/server architecture will allow you to distribute processing power and information resources where they can work most effectively for your organization.

In the future, Open, Cooperative Computing will allow you to connect disparate systems and applications into one enterprise-wide environment, with a consistent, intuitive graphic interface and advanced productivity tools for desk workers and top management. It will give you transparent access to the information you need, wherever it may be within your organization.



Our Vision Of The Begins With A Br



Future Of Computing Bridges To The Past.

No vision of the future can be successful if it doesn't allow you to build on the investments you've made in the past.

Open, Cooperative Computing provides bridges from your current base of hardware and applications. So you can begin building now for the open environment of the future, without walking away from your existing investment.

Changing your computing strategy is a major effort, even if the promised rewards are great. Confidence in the vision, experience, and dependability of your vendor is critical.

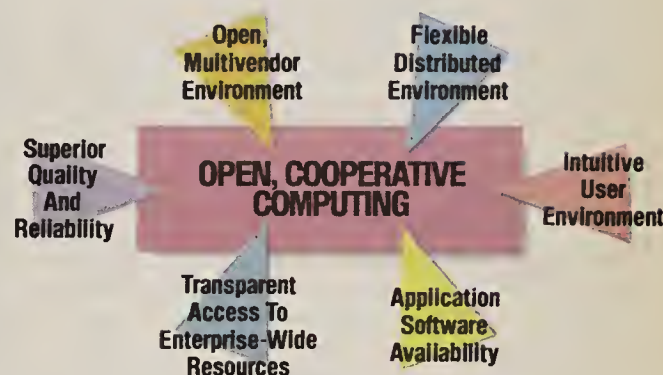
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A Comparison Chart of the Major Cooperative Processing Software Products:

	SUPER-LINK®	Easel™	Mozart™	Arbiter®	IBM's HLLAPI™	IBM's APPC™
FUNCTIONS:						
Processing Topologies Supported						
Peer-to-Peer Processing	✓	✓	✓	✓	✓	✓
Existing terminal-based systems	✓	✓	✓	✓	✓	✓
Mixed Peer-to-Peer and existing systems	✓	✓	✓	✓	✓	✓
Application integrity/Software Distribution	✓	✓	some	✓	✓	✓
SAA/CUA Interface compatibility	✓	✓	some	✓	✓	✓
Workstation Environments Supported						
PC/DOS	✓	✓	✓	✓	✓	✓
OS/2	✓	✓	✓	✓	✓	✓
PC/DOS to OS/2 application compatibility	✓	✓	?	✓	✓	✓
LAN Server for shared applications and data	✓	✓	?	✓	✓	✓
Multiple transaction servers on a LAN	✓	✓	✓	✓	✓	✓
Development Environment Comparison						
Object orientation	✓	some	✓	✓	✓	✓
Dictionary and documentation	✓	✓	✓	✓	✓	✓
Panel/Form painter for creation/maintenance	✓	✓	some	✓	✓	✓
3270 screen capture: picture and attributes	✓	✓	✓	✓	✓	✓
CASE/Application Generation	✓	✓	✓	✓	✓	✓
Intelligent (language-sensitive) editor	✓	✓	✓	✓	✓	✓
System and user-defined reusable code templates	✓	✓	✓	✓	✓	✓
Integrated compile/test/debug	✓	✓	✓	✓	✓	✓
Execution time source debugging	✓	some	✓	✓	✓	✓
All development tools for DOS available in DOS	✓	✓	✓	✓	✓	✓
Objects Supported						
CUA display images	✓	✓	✓	✓	✓	✓
CUA dialog within display object	✓	✓	✓	✓	✓	✓
Validation within display object	✓	✓	✓	✓	✓	✓
Help processing	✓	✓	✓	✓	✓	✓
Error processing	✓	✓	✓	✓	✓	✓
Text window interactions	✓	some	✓	✓	✓	✓
Business graphics	✓	✓	✓	✓	✓	✓
3270 definition	✓	✓	✓	✓	✓	✓
Interactions with 3270	✓	✓	✓	✓	✓	✓
Interactions with Peer-to-Peer	✓	✓	✓	✓	✓	✓
"Logon" Scripts	✓	✓	✓	✓	✓	✓
Application integrity/Software Distribution	✓	✓	✓	✓	✓	✓
Local Data Access						
Indexed files	✓	✓	✓	✓	✓	✓
dBase	✓	✓	✓	✓	✓	✓
Flat Files (random access)	✓	✓	✓	✓	✓	✓
Flat Files (sequential access)	✓	✓	✓	✓	✓	✓
Multiple read/write to files on LAN Servers	✓	✓	✓	✓	✓	✓
High Level Functions Directly Available in the Language						
Field-level context sensitive help	✓	✓	✓	✓	✓	✓
Optional user learning mode	✓	✓	✓	✓	✓	✓
Display and selection from:						
Indexed files	✓	✓	✓	✓	✓	✓
Sequential files	✓	✓	✓	✓	✓	✓
In-memory lists	✓	✓	✓	✓	✓	✓
Menu display and selection	✓	✓	✓	✓	✓	✓
Determining 3270 screen identification	✓	✓	✓	✓	✓	✓
Read/write to 3270 in a single command	✓	✓	✓	✓	✓	✓
Read/write to 3270 one field at a time	✓	✓	✓	✓	✓	✓
Determine dynamic 3270 attribute changes	✓	✓	✓	✓	✓	✓
Embedded user assistance (pop-up selection lists)	✓	✓	✓	✓	✓	✓
Data editing/validation:						
Data type/mark checking	✓	✓	✓	✓	✓	✓
Single range/limit check	✓	✓	✓	✓	✓	✓
Field/data driven range/limit check	✓	✓	✓	✓	✓	✓
Date formatting/validation	✓	✓	✓	✓	✓	✓
Validation against local and LAN files	✓	✓	✓	✓	✓	✓
Required fields	✓	✓	✓	✓	✓	✓
"Must Fill" fields	✓	✓	✓	✓	✓	✓
Zero not valid fields	✓	✓	✓	✓	✓	✓
Peer to Peer Host Environments Supported						
MVS-CICS	✓	✓	✓	✓	✓	✓
MVS-IDMS/DC	✓	✓	✓	✓	✓	✓
MVS/TSO	✓	✓	✓	✓	✓	✓
DOS/VSE-CICS	✓	✓	✓	✓	✓	✓
VM/CMS	✓	✓	✓	✓	✓	✓
DEC VAX/VMS	✓	✓	✓	✓	✓	✓
Software Distribution Host Environments Supported						
MVS-CICS	✓	✓	✓	✓	✓	✓
MVS-IDMS/DC	✓	✓	✓	✓	✓	✓
MVS/TSO	✓	✓	✓	✓	✓	✓
DOS/VSE-CICS	✓	✓	✓	✓	✓	✓
VM/CMS	✓	✓	✓	✓	✓	✓
DEC VAX/VMS	✓	✓	✓	✓	✓	✓

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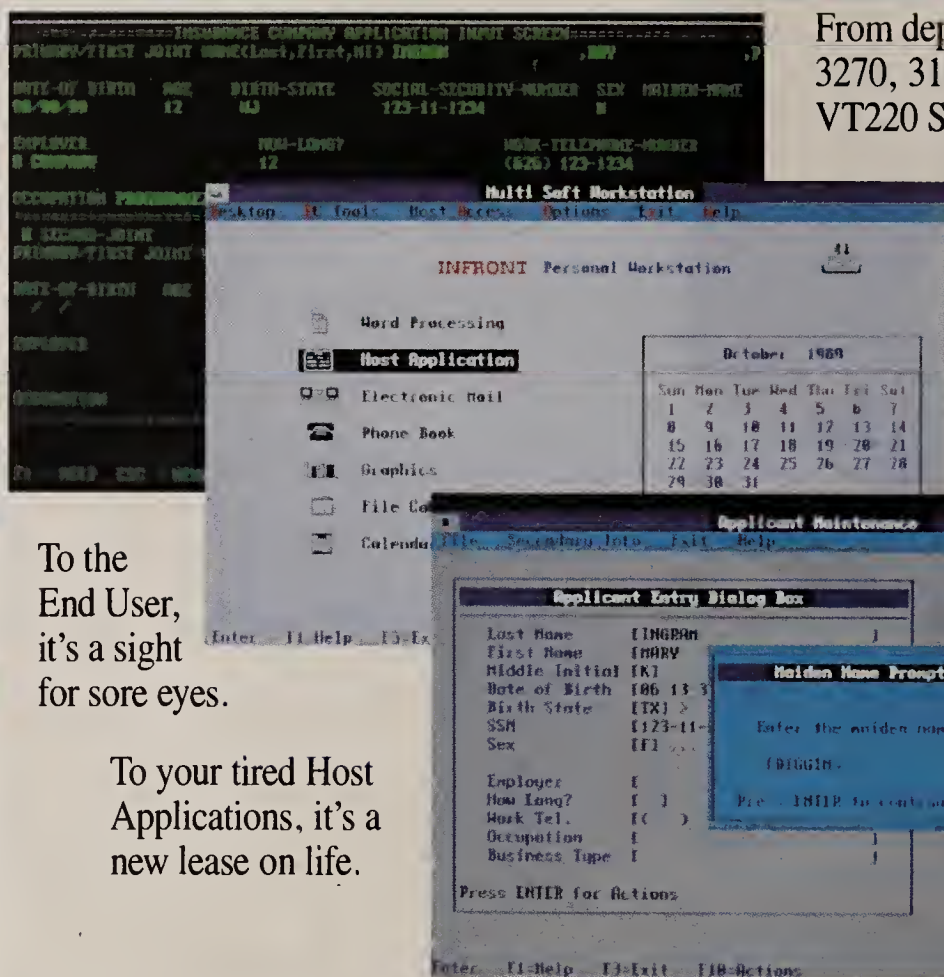
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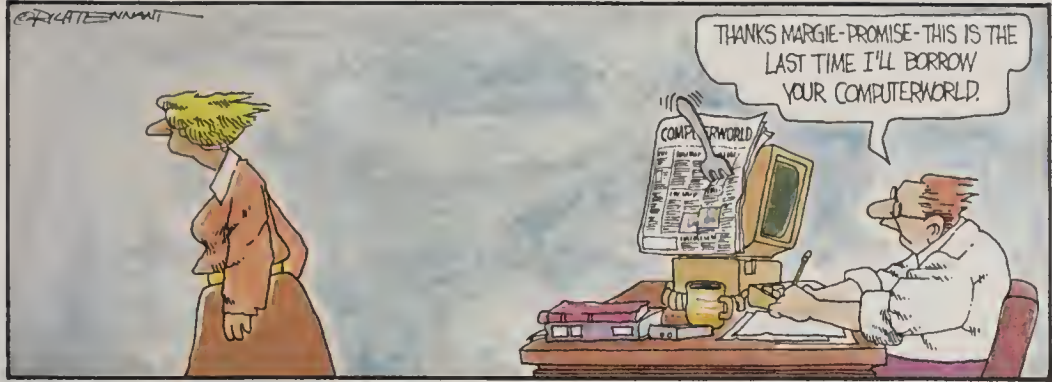
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 - 85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
 - 90. Computer/Peripheral Dealer/Distr./Retailer
 - 75. User: Other _____
 - 95. Vendor: Other _____
- (Please specify)

2. TITLE/FUNCTION (Circle one)
- IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
 - 21. Dir./Mgr. MIS Services, Information Center
 - 22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; Dir./Mgr. PC Resources
 - 23. Dir./Mgr. Sys. Development, Sys. Architecture
 - 31. Mgrs., Suprv. of Programming, Software Dev.
 - 32. Programmers, Software Developers
- OTHER COMPANY MANAGEMENT
- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. VP
 - 13. Treasurer, Controller, Financial Officer
 - 41. Engineering, Scientific, R&D, Tech. Mgt.
 - 51. Sales & Mktg. Management
- OTHER PROFESSIONALS
- 60. Sys. Integrators/VARs/Consulting Mgt.
 - 70. Medical, Legal, Accounting Mgt.
 - 80. Educator, Journalists, Librarians, Students
 - 90. Others _____
- (Please specify)

3. COMPUTER INVOLVEMENT (Circle all that apply)
- Types of equipment with which you are personally involved either as a user, vendor, or consultant.
- A. Mainframes/Superminis
 - B. Minicomputers/Small Business Computers
 - C. Microcomputers/Desktops
 - D. Communications Systems
 - E. Local Area Networks
 - F. No Computer Involvement

E4012-9

1. BUSINESS/INDUSTRY (Circle one)
- 10. Manufacturer (other than computer)
 - 20. Finance/Insurance/Real Estate
 - 30. Medicine/Law/Education
 - 40. Wholesale/Retail/Trade
 - 50. Business Service (except DP)
 - 60. Government - State/Federal/Local
 - 65. Communications Systems/Public Utilities/Transportation
 - 70. Mining/Construction/Petroleum/Refining/Agric.
 - 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
 - 90. Computer/Peripheral Dealer/Distr./Retailer
 - 75. User: Other _____
 - 95. Vendor: Other _____
- (Please specify)

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 - 23. Dir./Mgr. Sys. Development, Sys. Architecture
 - 31. Mgrs., Suprv. of Programming, Software Dev.
 - 32. Programmers, Software Developers
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- 11. President, Owner/Partner, General Mgr.
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 - 13. Treasurer, Controller, Financial Officer
 - 41. Engineering, Scientific, R&D, Tech. Mgt.
 - 51. Sales & Mktg. Management
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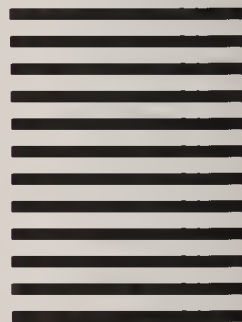
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SYSTEMS & SOFTWARE

S O F T T A L K

Robert Moran

Awaiting Officevision



A few weeks ago, IBM announced that the delays that had been hampering OS/2 Extended Edition 1.2 had been partially responsible for slowing down the release of Officevision Release 2.

Tony Mondello, IBM vice-president of office systems in the applications solutions division, also stated that he added several more months to the wait in order to bring the right level of quality to the products.

A few observers with close ties to IBM said that bringing the right quality to the products should be interpreted as IBM's response to the insistence of its Officevision users.

Users are out there, but IBM is extraordinarily reticent about their numbers, especially because, I think, Officevision — like Systems Application Architecture (SAA) itself — is still evolving, and IBM doesn't want to demean its promise with a blueprint of its present condition on the evolutionary curve.

If observers seem unexcited about Officevision in the present, they are not reluctant to boldly state the stronghold it will have in the future. It belongs to

Continued on page 41

Unix draws a crowd

New fault-tolerant offerings hit market

ANALYSIS

BY J. A. SAVAGE
CW STAFF

Suddenly, Unix-based fault-tolerant computers are in style.

Such machines were rushed on the market in January, with offerings from Integrated Micro Products, Inc., Stratus Computer, Inc. and Tandem Computers, Inc. Sequoia Systems, Inc. has had its offering on a homemade Unix platform for more than a year but popped up in the news in a technology-sharing agreement with Hewlett-Packard Co. Last month, Digital Equipment Corp. announced its proprietary fault-tolerant computer, which at least one analyst expects will run Unix within the year.

Fault tolerance under Unix is different than proprietary fault-tolerant offerings because more of the safety mechanisms have to be built into hardware. Since Unix is not built for reliability, each company with a Unix fault-tolerant offering has had to go into the Unix kernel and make changes to keep the operating system from crashing too easily.

The fault-tolerant machines now come in three types of architecture, aside from the type of CPU used: pair and spare, voting and self-checking (fast fail).

Stratus' FTX and Sequoia's Series 300 both use the pair-and-spare architecture, which has as its basis two CPUs and two spares.

Sequoia's processors are all doing work, with each pair

checking data against the other. If one goes down, the software shifts the load to the other processors.

Stratus, on the other hand, does not use the same concept of software recovery; its software automatically switches the load to the two spare processors.

Analyst Peter Kastner, with The Aberdeen Group in Boston, said that Tandem, in taking the voting approach, "went out of [its] way to be nothing like Stratus." Indeed, Tandem's Integrity S-2, in which three CPUs act as one, is certainly more complicated than Stratus' and Sequoia's systems. With three CPUs, when one CPU produces a result that differs from the other two, the odd CPU shuts down.

Choices grow

There are currently four firms that offer Unix-based fault-tolerant systems

Company	Integrated Micro Products	Tandem	Sequoia (HP)	Stratus
Model	Parallel XR M655	Integrity S-2	Series 300	FTX XA2000
RISC	No	Yes	No	No
Unix System V version	3.1	3.1	95% of Syst. V 3.0	3.2
CPU type	Motorola 68030	MIPS R2000	Motorola 68030	Motorola 68030
Number of CPUs	2	3	2 to 64	2 to 6
Date introduced	Jan. 1990	Jan. 1990	Feb. 1989	Jan. 1990
Maximum memory	64M bytes	40M bytes	2G bytes (for either 2 or 64 CPUs)	96M bytes (duplexed)
Entry-level price	\$130,000	\$172,000	\$350,000	\$49,000

CW Chart: Doreen Dahle

Integrated Micro Products' Parallel XR has a comparatively simple architecture: the self-checking or fast-fail method. Its systems carry no spare CPUs; instead, two processors run in

parallel and compare data every few milliseconds. If they differ, the system pauses for about one second while special diagnostics are run to determine which CPU

Continued on page 41

Evans tries graphics workstation line

BY JAMES DALY
CW STAFF

SALT LAKE CITY — Evans & Sutherland Computer Corp. expanded into the flourishing 3-D graphics workstation market recently with a five-member, general-purpose series with a high end capable of processing a reported 20 million instructions per second.

Company officials said the introduction of the Unix-based ESV family signals an important new direction for the company, which specializes in computer graphics applications and the sophisticated flight simulators

used in pilot training.

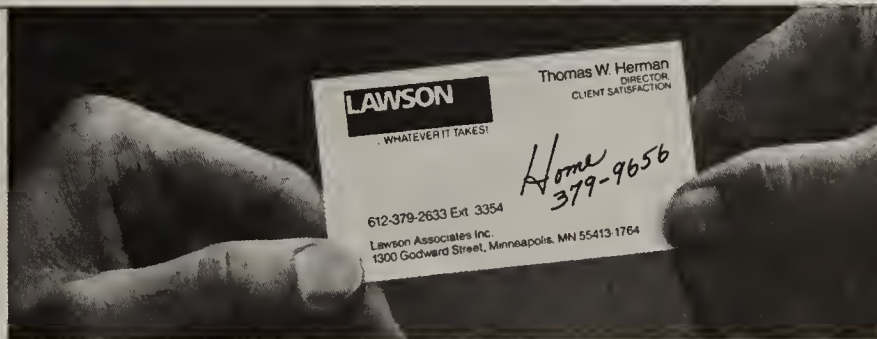
However, not all of the company's expansive ventures have taken the world by storm. Late last year, the firm quietly folded a Mountain View, Calif., division that produced a supercomputer it had spent three years and \$30 million crafting. The scrapping of the ES-1 supercomputer occurred less than six months after its introduction.

Analysts predict that entries into the graphics field stand a far better chance of success than those in the supercomputer area. The worldwide market for graphics workstations will become a \$33.2 billion industry by

1993, said New York-based Frost & Sullivan, Inc. research firm.

Evans & Sutherland's systems will use the Mips Computer Systems, Inc. R3000 microprocessor. They will also offer a 180M-byte hard disk and 8M to 120M bytes of memory. The top-of-the-line ESV50 will provide more than one million depth-cued vectors per second and over 100,000 four-sided, Gouraud-shaded polygons per second.

Prices for the entry-level ESV5, which is due for delivery next month, will begin at \$49,900.



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Pepperidge Farm scraps mainframe for PC-, midrange-based strategy

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

NORWALK, Conn. — Pepperidge Farm's baked goodies may taste mighty rich, but leaner and cheaper are the favorite flavors of the information systems division at company headquarters these days.

"We're looking at our business policies and procedures and bringing them into the '90s," said MIS director Douglas Parrish.

The 53-year-old company has begun phasing out its IBM 3090 Model 120 and moving to a distributed network of 21 IBM Application System/400 midrange machines and 400 to 500 personal computers [CW, Feb. 12].

Computerization is playing a critical role in company President Richard Shea's "Project Freshness," a business mission to get the products onto store shelves at their crisp and crunchy peak.

Other changes in networking and factory automation have drawn the IS department out of its traditional role "into a much more global relationship with the business," Parrish added. "It's spectacular to the point where we're involved in just about everything."

Five years ago, the data center was "doing the classical MIS finance and bookkeeping" on the single mainframe and a few IBM System/38s, Parrish said.

Like many IS directors, Parrish had accepted the inevitable progression to bigger and costlier machines as his computing needs grew. But while data center expenses climbed, he was watching the burgeoning wealth of software available for PCs and considering the possibilities of distributed processing.

"We were getting nothing but more cycles from the mainframe," he said.

So in mid-1989, the company

shifted direction and started replacing all of its System/370 applications in finance, manufacturing and decision support with AS/400-based software. Manufacturing applications have been installed on AS/400s at its nine bakery plants, and the company also added a communications package to tie together operations, marketing and sales departments on an AS/400 Model 60 at headquarters.

During the past year, the systems development department expanded from 16 to 25 people while the "MVS techies" oper-



ating the mainframe began leaving for other jobs, Parrish said. "We were able to take our system programming staff down from seven people to one," he added.

Eventually, downsizing will shave \$250,000 to \$500,000 off the annual bottom line in equipment and people, Parrish said.

Bread of new efforts

A subsidiary of Campbell Soup Co., Pepperidge Farm began as a mail-order home-baked bread business in 1937. Connecticut homemaker and company founder Margaret Rudkin began experimenting with stone-ground whole wheat flour to find a bread her children would eat.

Today, the business employs more than 6,000 people and produces 450 types of breads, cakes, cookies, crackers and frozen desserts. Its 1989 operating profits were \$54 million, making it one of Campbell's highest margin performers, according to Stephen Carnes, an industry analyst at Piper Jaffray & Hopwood in Minneapolis.

There are now four AS/400 Model 60s at corporate headquarters and nine Model 50s dis-

tributed throughout Pepperidge Farm plants in several states.

One of the Model 60s will be dedicated to sales applications, which are currently processed in DB2 on the mainframe. The IS staff is developing an in-house application for sales data, which will run on the relational database built into the AS/400.

Although Parrish declined to identify the software vendors chosen for some of the new AS/400 applications, he did say that AT&T was selected as the company's network vendor for a multimillion-dollar project.

"There is still a lot to do," Parrish said of the three-year project. "But one piece of our networking scenario is putting handheld computers into all our delivery trucks. We'll have that installation completed by June or July."

Pepperidge Farm's 2,400 independent distributors will be working out of their trucks with Fujitsu America, Inc. handheld computers and printers.

"They'll be able to place all orders electronically and sell products into the supermarkets the same way," Parrish explained. "The distributor can sit down at home, figure out tomorrow's load, key it into the system and transmit it."

That transmission will end up in AT&T Mail, which Pepperidge Farm will poll each night and then route orders to regional bakery plants.

On the factory automation end, Pepperidge Farm is currently building a \$181 million plant in Pennsylvania that will integrate computer operations from the plant manager's office to the factory floor.

Much of the state-of-the-art automation going into that plant was prototyped and tested at the Lakeland, Fla., factory, which is still using an IBM System/38 to download production control information to an extensive network of 80386-based industrial computers on the plant floor.

Open systems anarchy: The gods must be crazy

BY AMY CORTESE
CW STAFF

TORONTO — God was able to create the world in six days because he didn't have an installed base, joked Larry Dooling, president of AT&T's Unix Software Operation at a recent conference on open systems.

Like the best jokes, this struck a common chord among the information systems executives gathered at a conference on Unix and open systems held recently in Toronto. For most of these corporations, which have millions sunk in proprietary systems, the move to open systems is not quite so easy.

As vendors preach about the next wave of computing, based on networked systems of powerful workstations doing cooperative processing, users are grappling with how to get from here to there with minimal disruption.

In the mix-and-match world of open systems, anarchy rules, and many pioneering IS managers are finding that they are taking on more and more responsibilities themselves.

"I'm putting more time into technical issues when I should be involved in business issues," said Daniel Sasson, group director of Systems and Technology Information Systems at Northern Telecom Canada Ltd. Meanwhile, vendors are "throwing more and more MIPS at me, but no one worries about how to manage it," he said. Smaller vendors do not have the resources to support multivendor environments, while larger vendors command a high price for those services, he added.

Though few would dispute the superior price/performance of Unix and reduced instruction set computing-based systems, Sasson said, open systems carry a hidden cost. As more of the systems integration burden falls on the user, and networks push computing out to the far reaches

of an organization, more staff members are needed who are skilled in networking and integration. Furthermore, with the decentralization and departmental independence encouraged by low-cost computers linked together by networks, it is harder for IS to keep track of costs.

Northern Telecom has a mix of IBM and compatible mainframes; Hewlett-Packard Co. systems, both Unix-based and proprietary; a multitude of Unix workstations; X-terminals; personal computers; and local-area networks. "My nightmare is to bring this all together," Sasson said.

Lack of communication

With the advent of low-cost, powerful workstations and less centralized control, many IS managers have found themselves with a hodgepodge of proprietary and Unix-based systems that do not talk to one another without some good prodding.

"Our network diagram looks like a bowl of spaghetti," said Trevor Cook, a senior systems programmer for the City of Etobicoke, Ontario, Board of Education. "Our major goal right now is integration."

Often, getting Unix systems to talk to one another is as difficult as getting them to talk to proprietary systems. The problem, users said, is that every vendor's implementation of Ethernet or Transmission Control Protocol/Internet Protocol, so-called standard network protocols, is slightly different.

"You can have two X.25 networks that don't play together," said Lt. Col. Terry Elton, Office of the Secretary for the U.S. Air Force. "What is missing is test suites for some of these things." Standards bodies such as X/Open Ltd. and the National Institute of Science & Technology are working on these, he noted.

Users agreed that there are
Continued on page 38

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Open systems

FROM PAGE 37

trade-offs to moving to open systems, but that the benefits to be gained are worth the pain. "Sure, you have to roll up your sleeves and do a lot of work, but maybe you won't have to do it again in a few years," said John Williams, a member of General

Motors Corp.'s Unix Systems Steering Committee.

"With an MVS upgrade, you have to do the same amount of work every two years," he added.

"We have a 'no pain, no gain' attitude," Elton said. "You have to make that commitment."

Currently, the Air Force supports a multitude of systems in more than 800 locations around

the world.

"Our goal is to have Unix on all platforms from the desktop to mainframe," Elton said. But with more than 16 million lines of code running on Unisys Corp. equipment, he added, "We can't afford to start over."

Instead, the Air Force is introducing Unix into its environments in a controlled fashion. The much-publicized AFCAC

contract set a standard for Unix-based desktop platforms for office automation.

Reality strikes

"We want to move to a true distributed environment," Elton said. However, "the realities of getting there are that there is no one vendor" that can do it for you, he said.

To help keep the vast Air

Force systems in check, the agency has established a systems integration office to help identify requirements and keep an overall systems integration perspective on individual procurements.

The path to open systems will be different for every organization, and there are no easy answers, but it should always be pragmatic, Elton said.

SOFT NOTES

Repository users form R/AD group

Three companies became the founding members of the Repository/Application Development Cycle International User Group (R/AD) this month. The nonprofit group, headquartered in Chicago and established by Ernst & Young, On-Line Software International and Platinum Technology, Inc., will hold its first meeting Sept. 10-12 in Chicago.

Informix Software, Inc. recently announced that it signed a Cooperative Software Program agreement with IBM. Under the terms of the agreement, IBM will market Informix's information management products, which include the Informix-Online database engine and Wingz, a graphical spreadsheet for its AIX-based hardware platforms.

The Object-Oriented Cobol Task Group, a subcommittee of the Conference on Data Systems Languages (Codasyl) responsible for developing object oriented programming extensions to Cobol, is issuing a call for new members.

At present, the group consists of seven members and four observers: Allinson-Ross Corp., Digital Equipment Corp., Hewitt Associates, Hewlett-Packard Corp., IBM, Interactive Software Engineering, Inc., Micro Focus Ltd., Realia, Inc., SPC Systems USA, Sun Microsystems, Inc. and Wang Laboratories, Inc.

The group's second meeting will be held March 26-30 at HP in Cupertino, Calif.

Industry experts interested in joining should contact Chairman Ken Belcher at Realia, Inc. in Chicago.

IBM recently acquired a minority equity interest in Worldwide Chain Store Systems, Inc., a Chicago-based developer of retail distribution software.

In addition, IBM will enhance WCSS software for System/370 and Application System/400 platforms.

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By its very nature, the world embraces change.
By its very nature, conventional programming does not.

Kaiser finds a role for fault-tolerant computers

ON SITE

BY JEAN S. BOZMAN
CW STAFF

WALNUT CREEK, Calif. — Faced with a transaction load that was nearing three million per day and the ongoing need for high performance and round-the-clock reliability, the sprawling Kaiser Permanente North health care organization has added a new element to its information systems complex — fault tolerance.

Kaiser, with 14 hospitals, 2,500 physicians and 2.2 million health plan members in the San Francisco area, is installing two fault-tolerant Tandem Computers, Inc. Cyclone CPUs in its traditional IBM mainframe shop. Both the IBM and the high-end Tandem systems will be accessible from 12,000 IBM-compatible dumb terminals scattered throughout the 14 hospitals and 27 outpatient facilities.

By looking at their screens, doctors and nurses should not be aware of the changes taking place on the data center's raised floor.

"We use a standard menu and standard screen forms so that end users literally don't know which computer they're looking at," said Neal Bell, Kaiser North's MIS director. All Kaiser North terminals send their information back to a centralized data center using Kaiser's private microwave backbone network.

IBM's Netview network management software reports any line failures. In case of a disaster, such as an earthquake, the

WE WILL HAVE succeeded in our IS mission if our computer people feel like they're taking care of the patients."

NEAL BELL
KAISER NORTH

operation can be backed up by Kaiser South, another Kaiser Permanente operation in Southern California, which is also installing Tandem systems.

The IBM and Tandem computers will trade data, swapping it from Tandem's on-line systems to the more traditional IBM financial and decision-support systems. While Kaiser has increasingly been considering the use of off-the-shelf software products and applications, it is now using its staff of 200 applications programmers and 50 systems programmers to develop customized software that is specific to the health maintenance organization's needs and to modify the existing applications to support the Tandem systems. Among the programmers' first tasks: the development of "transport utilities" that will allow the Tandem and IBM systems to talk on-line.

In that way, Kaiser's IBM IMS and DB2 databases will be integrated with Tandem's Nonstop SQL relational database management system. The result, planners hope, will be a high-performance fault-tolerant computer complex that keeps the IBM databases current.

"We were already familiar with the issues of managing multiple databases,"

said Barbara Beck, manager of strategic projects. "Our IMS environment has been highly integrated with DB2 for a number of years."

The move to Tandem was made for two reasons, Kaiser managers said. "A lot of new medical systems development is taking place on the Tandem platform because of its nonstop features," Bell said. "The hospital environment is, of course, a seven-day-a-week, 365-day-a-year environment." Bell said he also expects fewer outages for Tandem maintenance than the IBM mainframes require.

The second reason cited by Bell was what he termed the relatively slower

speed of the IBM RDBMS.

"DB2 is not a high-performance database," Bell explained. "It is used for management reporting on our mainframes today. [In the future] we're going to use the DB2 databases for ad hoc queries, and we plan to update them on a weekly or monthly basis."

The Tandem systems, delivered earlier this year, are scheduled to go on-line next month with a limited amount of software, but full use of new software for Kaiser's patient care management, patient registration and pharmacy systems is not expected to be accomplished before September. Under Kaiser's plan, initiated

two years ago, those three applications carry the highest priority; business applications such as accounting are further down the line.

"Right now, we're developing the mechanisms and tools to create the Non-stop SQL environment on Tandem," Beck said. "More work will have to be done to move data between the Tandem and the IBM systems."

When work on the first few applications is completed this fall and the cutover is made to a fully integrated database architecture, users should not feel the difference, Bell and Beck agreed.

"We will have succeeded in our IS mission," Bell said, "if our computer people feel like they're taking care of the patients."

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Frankfurt, W. Germany	May 2, 3	New York, NY	Oct. 3, 4
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Moran

CONTINUED FROM PAGE 33

IBM, after all, and along with its AD/Cycle, IBM is putting a huge bankroll behind it.

According to one consultant, IBM's cash will bring support for heterogeneous platforms — Microsoft's Windows 3.0, IBM's AIX, Unix and Apple Computer's Macintosh. Mondello said that users wanted the above support but that IBM was still exploring its possibilities and had yet to make a commitment.

"It brings Officevision functionality to non-IBM equipment to allow heterogeneous systems to access information through Officevision as they are win-

dowed to the enterprise network," the consultant said. "IBM is trying to control the applications and the enterprise network and allow for some level of interoperability between IBM and non-IBM systems."

A spokesman for an Officevision third-party developer said that he had recently attended a computer conference in Palm Springs, Fla., at which Earl Wheeler, the IBM vice-president in charge of SAA development, sported a new SAA. "In the new SAA will be the wide-area network and the local-area network," the source said. "The local-area network will run OS/2, DOS, AIX, Unix and the Apple Macintosh."

Nevertheless, IBM's two announced SAA products — Officevision and AD/Cy-

cle, including the repository — are on hold until 1991. But does it make a difference?

I've talked to several large organizations — some with and some without Officevision. Those without it have not dismissed the product's potential but still have to wrestle with what to do with thousands of workstations running under DOS and other platforms such as IBM's Professional Office System (Profs). Those with Officevision are exploring its potential in pilot projects.

As usual, IBM's premier SAA mid-range processor, the Application System/400, received short shrift in the new release schedule. IBM said that in August it will announce when the AS/400 version will be released.

Mondello said that the delay does not leave the AS/400 open for encroachment: "The users today are really implementing DOS and mainframe terminal implementation, and the OS/2 will tend to be on the high end of it."

Oh, well. I thought Stephen Schwartz, IBM vice-president and general manager of applications business systems, had been making quite a different case for the AS/400.

Moran is *Computerworld's* senior editor, software.

Unix

CONTINUED FROM PAGE 33

failed before switching to the uncorrupted one. Integrated Micro Products put its money into other redundancies, such as power supplies instead of CPUs to keep the cost down, according to Brian Knowles, vice-president of marketing.

Another layer of architecture is the type of instruction sets used. All but Tandem's systems are based on traditional complex instruction set computing (CISC), using Motorola, Inc.'s 68020 or 68030 processors.

Both analysts and vendors agreed that in using CISC processors, much of the system has to be redesigned to accommodate another generation of chips. But while redesigning reduced instruction set computing (RISC) fault-tolerant systems may be easier than CISC, Tandem still expects to be about a year behind the latest CPU release, according to Shirley Henry, director of product marketing for Tandem Unix systems.

HP, which recently bought a stake in Sequoia, will supply its RISC chips for use in future models of the Sequoia machine, perhaps within a year.

Stratus said its next generation of hardware will also be RISC-based, expected sometime in the early 1990s. There is a potential advantage to RISC-based fault-tolerant systems, but the advantage will not be immediately evident.

"RISC puts technology on a cost curve for users who need to upgrade," said Nina Lytton, editor of "Open Systems Advisor." "The potential disadvantage is that CISC is not as extensively upwardly mobile as RISC. There might be cost parity today [between the two], but the RISC customer is on a different cost/power curve."

Upward mobility aside, fault-tolerant systems users may find what works best for them has more to do with the applications they want to run. Tandem's Integrity acts as one processor; the others are multiprocessor-type systems.

"Does my application run better on a uniprocessor or spread over a bunch of general-purpose processors?" Kastner asked, putting himself in a user's place. With a virtual uniprocessor, an application like program trading may run better, but one that is a transaction/update/communication would run better on a multiprocessing system, Kastner said.

All of the fault-tolerant vendors have had to toy with the Unix kernel to adapt it to their systems.

There are disadvantages to Unix, but that is nothing new, according to Omri Serlin, president of ITOM International, Inc.: "There are no unique problems to fault-tolerant systems outside normal complaints against Unix."

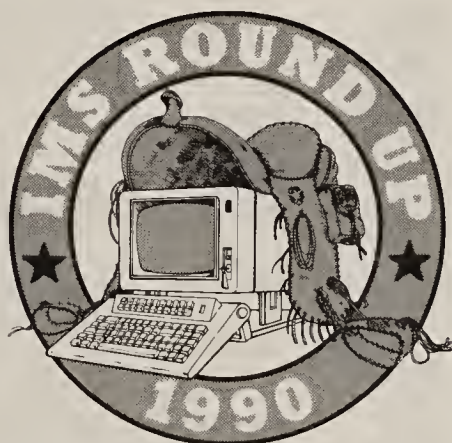
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SYSTEMS & SOFTWARE

NEW PRODUCTS — SOFTWARE

Computer-aided software engineering

Computer Systems Advisers, Inc. has announced a software tool designed to automate the tasks associated with information systems planning.

Called POSE-PMD, the program automates matrix diagramming in an IBM Personal Computer XT, AT or Personal System/2 environment. The software can import design specifications generated from other diagramming techniques and offers 16 different colors for highlighting user views and accenting key relationships.

It is priced at \$595 per module. A complete POSE computer-aided software engineering system, including a data model tool kit, a process model tool kit, screen/report prototyping and the POSE-PMD planning matrix diagrammer is available for \$2,995.

Computer Systems Advisers
50 Tice Blvd.
Woodcliff Lake, N.J. 07675
201-391-6500

Ready Systems has enhanced its Card-tools computer-aided software engineering product for Ada, military, telecommunications and general applications for real-time embedded systems.

Version 3.6 offers a task timer function designed to simulate the performance of multiple paths within a software architecture, the vendor said. It allows the developer to detect several common

design problems and to make modifications in design partitioning, parallel processing and intertasking synchronization and communications. Single-user pricing starts at under \$7,000, and the latest release is available free to current Version 3.5 customers.

Ready Systems
M/S C991
470 Potrero Ave.
Sunnyvale, Calif. 94086
408-736-2600

Systems software

Maynard Electronics has announced the release of Maynstream Version 2.51, a software package that supports Novell, Inc.'s Netware 386 network operating system.

The software provides backup and restore capabilities for binderies in Netware 386 and provides an automatic backup for Apple Computer, Inc. Macintosh and IBM Personal Computer files and folders on a Netware 286 or 386 server, according to the vendor.

Maynstream 2.51 can preserve the last date access field provided by Netware and can back up open files that have not been opened in a deny read or exclusive mode.

The product is being offered to Maynard's current customers as an upgrade for \$79.

Maynard
460 E. Semoran Blvd.
Casselberry, Fla. 32707
407-263-3500

NEW PRODUCTS — HARDWARE

Turnkey systems

Softswitch, Inc. has announced an addition to its 400.Link product family.

The 400.Link/Officevision turnkey system connects IBM mainframe-based electronic mail networks with other E-mail systems via the X.400 standard. The product comes in entry-level Model 10 and production-ready Model 20 versions.

Model 10 is based on an Intel Corp. 80386SX processor with 4M bytes of memory, two Motorola, Inc. 68000-based I/O processors and a 40M-byte hard disk. It has a price of \$35,000 for all hardware and software.

Model 20 is based on a 25-MHz Intel 80386 processor with 8M bytes of main memory, two Motorola 68000-based I/O processors and a 322M-byte disk. The Model 20 costs \$65,000 for all software and hardware.

Softswitch
640 Lee Road
Wayne, Pa. 19087
215-640-9600

Data storage

The ISD 1200, a storage enhancement product that was recently announced by Sea Change Corp., has been released for NCR Corp.'s family of NCR Tower computer.

The 1.2G-byte disk subsystem can be installed inside most NCR Tower models or connected via an external cable and enclosure, and multiple ISD 1200s can be installed to provide nearly 10G bytes of on-

line storage, the vendor said. The product offers support for Tower models that use NCR's Unix operating system 3.0, which is based on AT&T's Unix System V Release 3.

The ISD 1200 is available for a suggested list price of \$17,434.

Sea Change
Suite 38
1100 Central Pkwy. W.
Mississauga, Ont., Canada L5C 4E5
416-272-3881

KMW Systems Corp. has announced an 8mm tape subsystem that connects directly to IBM mainframes and Application System/400s without any host software modification.

Channelaccess 9522 allows 2G bytes of data to be stored on a single 8mm tape cartridge. The system supports block multiplexer and data streaming channels and offers speeds of 2M, 3M or 4.5M bit/sec.

Features include an LCD front-panel menu for system installation and configuration, IBM 3420 magnetic tape emulation for installations and configurations of existing systems and a controller that supports up to seven tape drives, the vendor said.

A basic configuration of the product, including a rack-mounted controller and a tape chassis with one tape drive, sells for \$18,500. Orders are being accepted now for August deliveries.

KMW
6034 W. Courtyard Drive
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The On-Line RDBMS. What is it? And what are its benefits?

In two weeks, Sybase will publish its views on this, the third Sybase Forum topic. We feel that an open and honest presentation of the views surrounding key issues in the market—Client/Server Architecture, The Open RDBMS, and The On-Line RDBMS—is the best way to differentiate industry leaders. So once again, we have reserved the right hand column for Oracle to present its views.

The Sybase View

The Oracle View

(The Sybase invitation to Oracle, delivered by hand, covered the following points in detail. One: manuscripts must be limited to 500 words or less. Two: manuscripts from both parties must be submitted to the San Francisco office of the accounting firm of Ernst & Young by 5 PM, Tuesday, March 20, 1990. Three: Ernst & Young will ensure that manuscripts are published in full, and exactly as submitted. Four: no revisions will be allowed, and neither party will be permitted to see the other's comments prior to submitting its own manuscript.)

THE SYBASE FORUM



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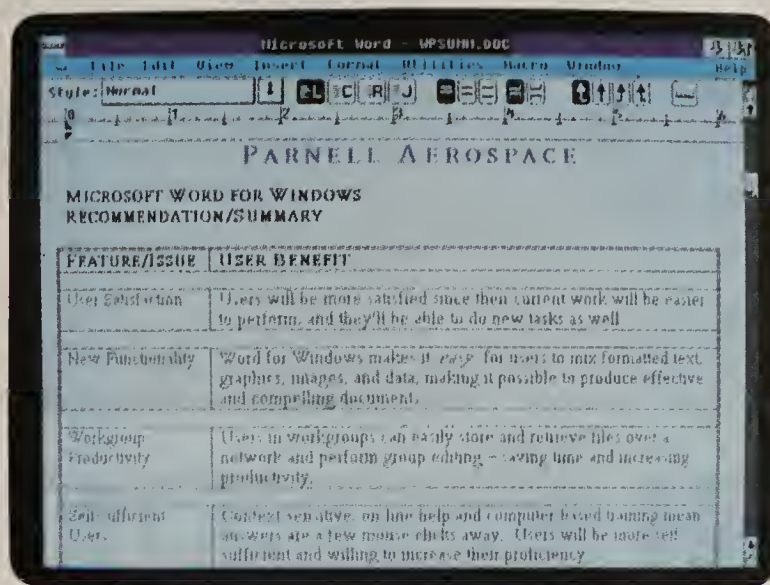
While Document Templates give all types of users easy access to sophisticated features like Styles, macros and glossaries. This guides them through the creation of their document, ensuring accuracy.

And in the interest of higher learning, Word for Windows features a built-in, computer-based training program and context-sensitive, on-line help. So users can instruct themselves, rather than wandering the halls in search of help.

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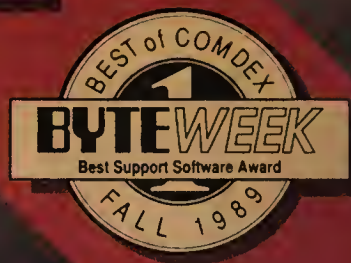
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PCs & WORKSTATIONS

M I C R O B I T S

Patricia Keefe

Days of our PC lives



When you start poking around the reasons behind lethargic personal computer sales, it quickly be-

comes clear that many users have held off on purchasing decisions either because they are confused about what to buy or because they can't find what they are willing to buy.

You needn't look any further than the mercurial relationship between industry standard-setters Microsoft and IBM for an explanation. "The relationship between the two is very strained now," said a developer close to both camps. "They have agreed not to get divorced for the sake of the kids [installed base]."

The two are so busy contradicting each other and undermining their joint efforts that many developers and users are unwilling to commit themselves in a subsequently unclear and flat market.

Some observers place more blame on Microsoft, which they contend is suffering from an advanced case of egomania.

"They think they don't need IBM anymore," claims one developer, accusing founder Bill Gates of wanting "to be the IBM

Continued on page 54

Riding the PC roller coaster

Because of ups and downs in sales, forecasts remain a tough call

BY PATRICIA KEEFE
CW STAFF

The outlook for 1990 personal computer sales is much like Mark Twain's characterization of the weather in New England — if it's not to your liking, just wait a bit and it will change.

In the case of topsy-turvy PC growth forecasts, five months has taken the volatile market segment all the way from doom and gloom, to down but not out, and right up to, "Hey, this isn't so bad after all."

The resulting estimates represented anywhere from a 3% to a 10% drop in PC unit sales. In 1989, unit growth was about 17% vs. 22% in 1988, according to Prudential-Bache Securities, Inc. [CW, Oct. 23, 1989].

In October, analysts were practically morose, with predictions for 1990 unit sales growth ranging from a low of 8% to a seemingly giddy high of 15%. Donaldson, Lufkin & Jenrette blamed "a rapid succession of comments from Apple [Computer, Inc.] and Compaq [Computer Corp.] that were . . . intended to bring down Wall Street's hyper-inflated expectations for their financial performance."

Slump predictions are somewhat attributable to Compaq and Apple but only because they did not ship products in volume in the last quarter as they traditionally do, said Steve Ossad, an analyst at Montgomery Securities.

"Any other industry would say 10% growth was great," Ossad said.

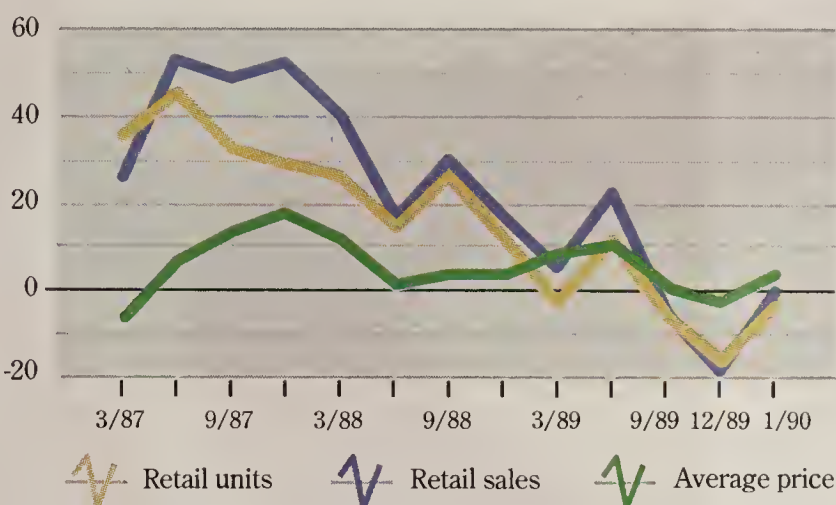
"The big problem with this industry is that if the growth ain't fantastic, then [people say] we're in a slump," added Seymour Merrin, president of Merrin Information Services, Inc.

Sentiments such as these are beginning to build as the end of

price rose 13%, reflecting greater sales of high-end boxes. Despite losing share steadily from August to November, Compaq managed to recoup those losses in December and January, posting a 17% increase in unit sales in January, Martin said.

On the mend

The PC market is showing signs of growth in the retail sector primarily because of IBM's strength



Source: Infocorp and Prudential-Bache Securities

CW Chart: Doreen Dahle

the first quarter draws near. Most financial and technical analysts now say that while sales will continue to soften, it will prove a respectable year for revenue.

As evidence, Rick Martin at Prudential-Bache pointed to January results from IBM and Compaq. Both vendors managed to stall deep discounting and still gain share in a flat market, he said in a March 1 "Industry Update."

IBM increased its unit sales by 34%, and its average selling

Overall, U.S. retail sales of PCs fell 1% in the period November 1989 through January 1990 over the same period a year ago, but January sales rose 20% over January 1989. This could be the start of an upturn. However, Martin cautioned that "without IBM's continuing strength, the market would have fallen nearly 10%."

Throughout the last two quarters, a number of factors have been steadily stoking the

Continued on page 54

Support for Sparc builds

BY JAMES DALY
CW STAFF

HOUSTON — Texas Microsystems, Inc. recently joined the slowly growing ranks of firms basing their reduced instruction set computing (RISC) workstations on Sun Microsystems, Inc.'s Scalable Processor Architecture (Sparc) chip design.

The Hardsparc Model 9001 will be targeted at industrial installations and is based on a 32-bit implementation of Sparc, a company spokesman said. It is capable of processing 12.5 million instructions per second.

With the announcement, Texas Microsystems joins Sun, Solbourne Computer, Inc. and Taiwanese manufacturer Tatung Co. in offering Sparc-based products. Analysts said they believe that a great deal of Sun's future success depends on how successful it is in getting manufacturers to use the Sparc design and port applications to it.

Sun freely licenses Sparc with the hope that the architecture will become the de facto RISC standard, in much the same way IBM dominated the personal computer world by encouraging clones of its Personal Computer. But Sun faces tough competition from other RISC designs being offered by companies such as Motorola, Inc., Mips Computer Systems, Inc. and Intel Corp.

The Model 9001 starts at \$15,995, with delivery 60 days after receipt of order. A high-resolution rack-mounted monitor is also offered at \$5,000.

Some folks think that COBOL, the language of the past, may also be the language of the future!

"Micro Focus COBOL for Presentation Manager has suddenly become the right language." BYTEweek, 6/19/89

"And COBOL, the language everybody uses without admitting to it - also refuses to go gentle into the night of old technology. . . Micro Focus appears ready to bring the old-time language into the brave new world of graphical user interfaces." PCWeek, 6/5/89

Micro Focus COBOL/2 Workbench Awarded 1989 Professional Solutions Award PC Tech Journal, 2/89

"The COBOL/2 Workbench, available from Palo Alto based Micro Focus, Inc. is by far the most powerful and complete PC-based COBOL development and maintenance toolset. This package is the Cadillac of PC COBOL toolsets." System Builder Magazine, 1/89

Micro Focus "ANIMATOR is a sparkling example of the reason why the PC-based COBOL workstation represents a quantum leap in programmer productivity." Database Programming & Design, 10/88

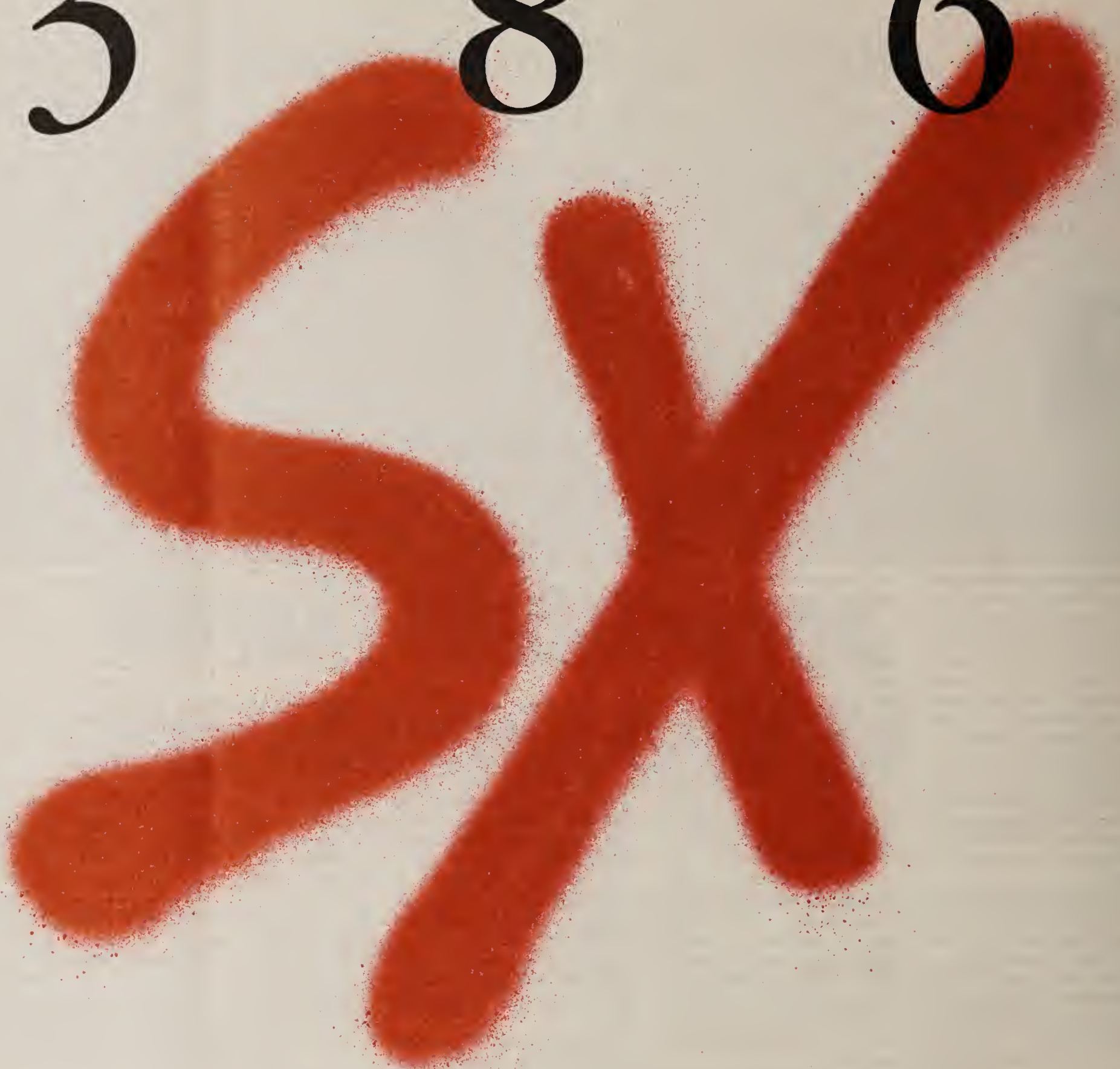
"Could COBOL be the key to the success of OS/2?" BYTEweek, 6/19/89

Micro Focus Awarded Four Out of Four Ribbons for "Overall Value" in Readers' Choice Awards InformationWEEK, 4/24/89

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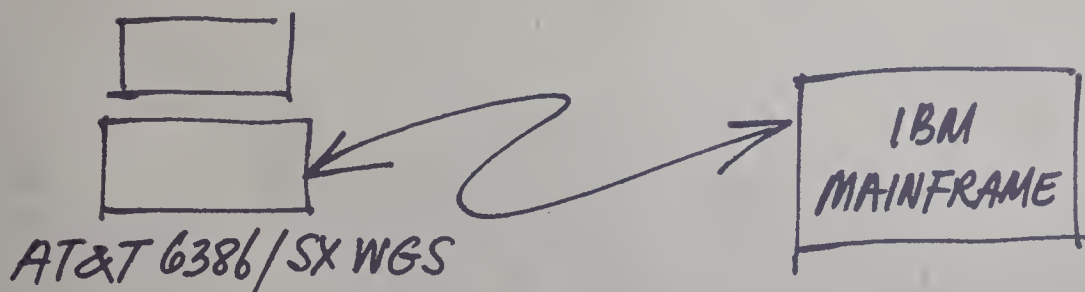


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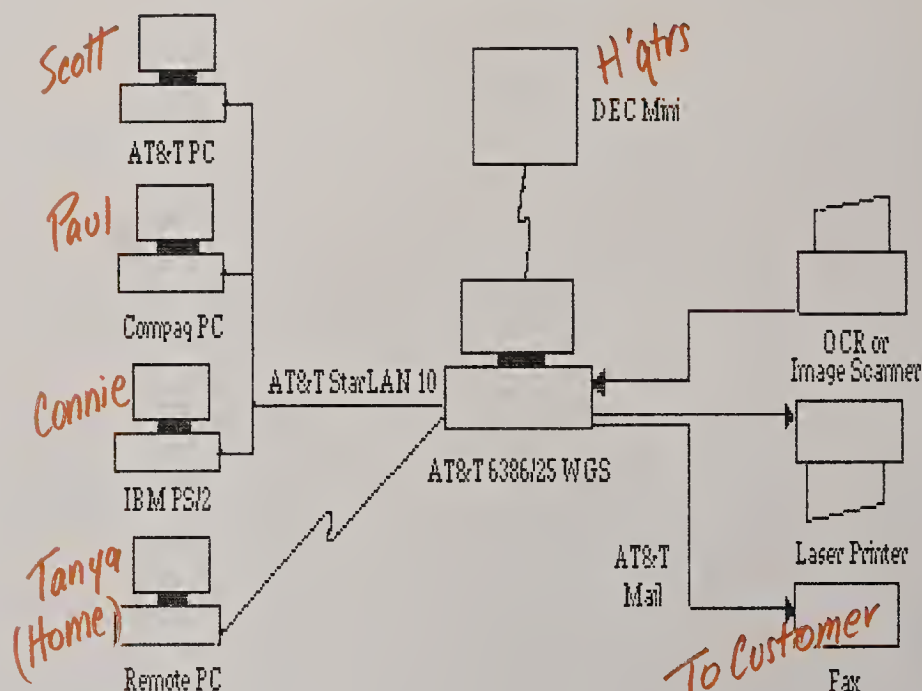
important corporate data held there.

The key lies in a network builder's oasis called the AT&T Application Operating Environment (AOE). AOE offers a unique collection of industry stan-



The Networked Computer

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dards (SNA in this case) that let AT&T's new Networked Computers work smoothly with the systems you already have.

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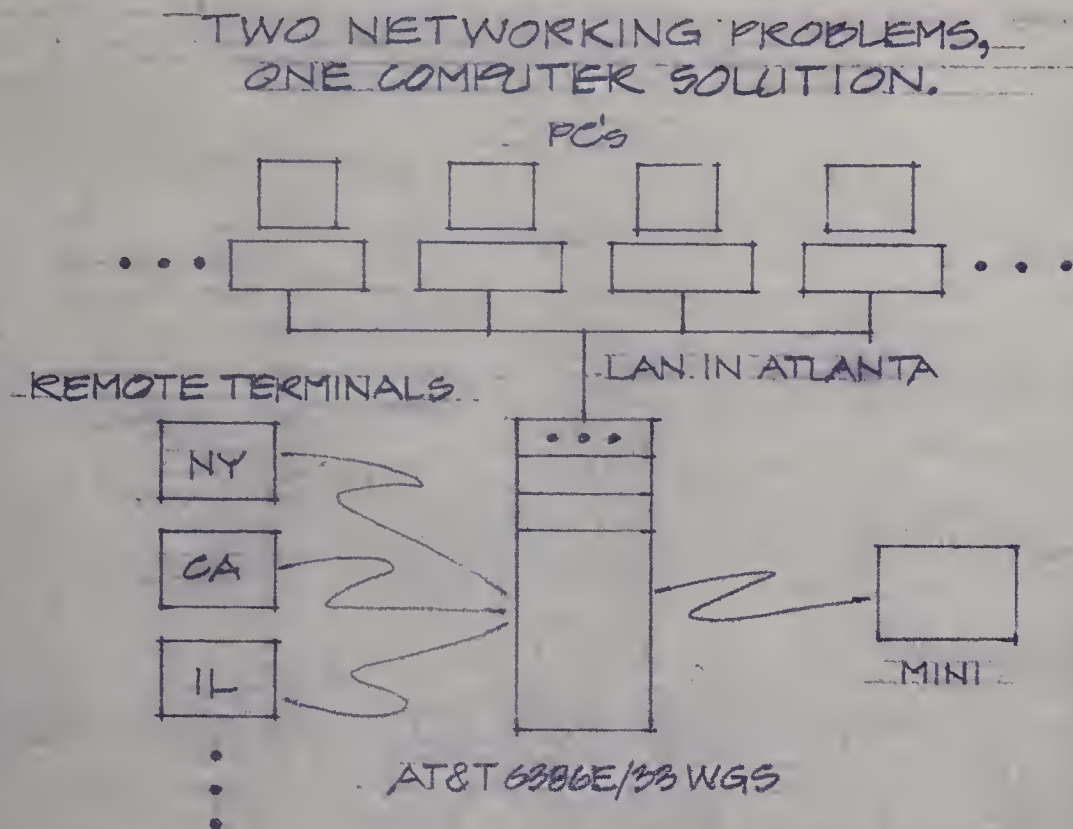
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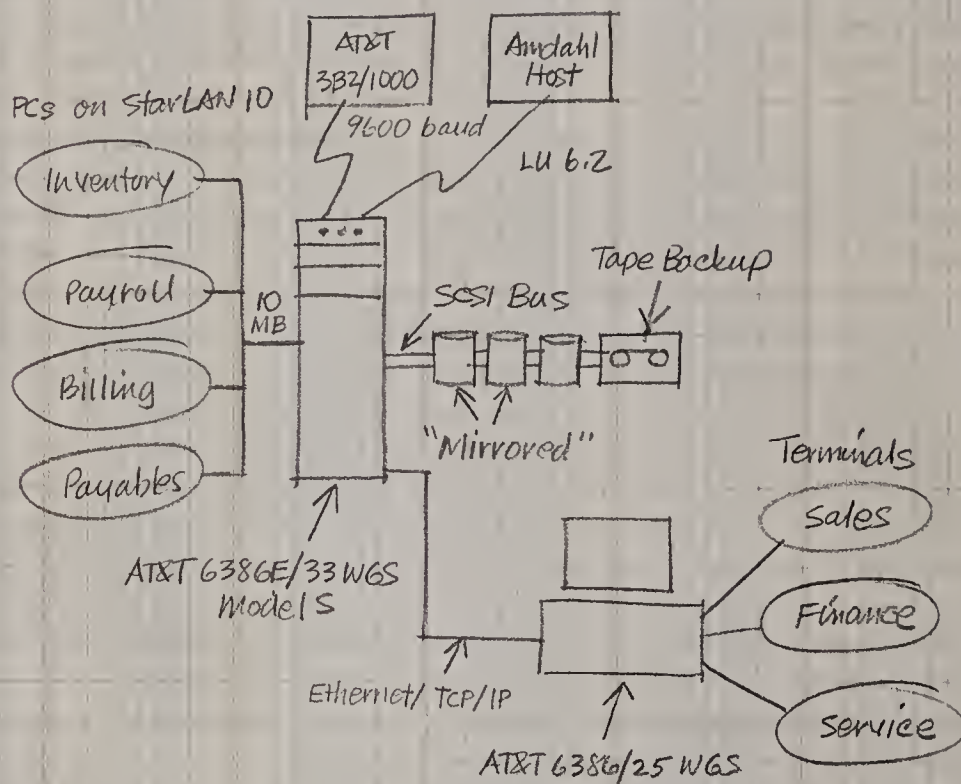
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Computer Systems

PRODUCT REVIEWS

NEC's Prospeed laptop boasts color

NEC Information Systems, Inc.'s Prospeed CSX is bigger and heavier than most other Intel Corp. 80386SX- and high-end 80286-based laptops.

Its claim to fame is its display — the first color flat-panel display available. Unfortunately, the display is so prone to lines and shadows that most users will prefer a monochrome display.

The NEC Prospeed CSX includes features typical of a laptop machine in its class. NEC has included an 80386SX processor running at 16 MHz and 2M bytes of random-access memory. The standard machine includes a 720K-byte/1.44M-byte 3½-in. floppy disk drive and a 40M-byte hard disk; a 100M-byte hard disk is available at additional cost. The 8.3- by 5.2-in. internal backlit color LCD provides a nonstandard resolution of 640 by 400 pixels, which most software would utilize as an IBM Enhanced Graphics Adapter (EGA) display. The screen technology is NEC's own and is called an active pneumatic display.

Internal connections are provided for a 2,400K bit/sec. modem, an 80387SX numeric coprocessor and a 2M-byte

additional memory card. The Prospeed CSX does not accommodate full-size cards. Software supplied includes hardware setup programs, Microsoft Corp.'s MS-DOS 3.30 and GW-Basic 3.23, and utilities to provide password protection for the keyboard and to support screen prints on NEC Pinwriter printers. NEC said that a special version of Windows/386 is included with the machine.

The Prospeed CSX weighs 17.2 pounds with the 40M-byte

NEC Prospeed CSX

Price: \$8,499

- Performance: Satisfactory to very good
 - Documentation: Good
 - Setup: Good
- Ease of use: Satisfactory
- Workmanship: Very good
- Support: Poor to satisfactory
- Value: Poor

hard disk and measures 15.5 in. wide, 14.7 in. deep and 4.1 in. thick.

Against laptops overall, the Prospeed is impressively fast; among high-performance laptops, its speed is slower than

many other machines. Software compatibility is good, but the full display height is not used with EGA software and an IBM Color Graphics Adapter (CGA)-only version of Microsoft's Flight Simulator did not work properly with the Prospeed's display. NEC provides no way to force the display into CGA mode.

Connectors are provided for a 9-pin serial port, a parallel port, an external VGA monitor and an external floppy drive. Both 360K-byte and 1.2M-byte 5¼-in. external floppy drives are available as options.

Documentation includes loose-leaf MS-DOS and GW-Basic manuals, a spiral-bound owner's guide, an MS-DOS quick-reference guide and update bulletins for both the machine and MS-DOS.

Setup is similar to that of most other laptop machines. The hard disk must be partitioned and formatted prior to use.

While switches determine some of the settings, the default

settings are suitable for most uses. To set up the machine, users must run a hardware setup program by following the setup instructions in the owner's guide, then run a software setup program contained on the MS-DOS disk, following instructions



NEC's Prospeed CSX's color display is marred by lines and shadows

in the MS-DOS manual.

The 89-key full-size keyboard is a definite bright spot for the Prospeed CSX. Like most of NEC's laptops, the keyboard includes a separate full numeric pad. The keys are all full-size, with all-important keys (such as

Enter, Shift, Tab, Backspace, and Control) oversized. The layout is well-designed, and the keys are properly spaced.

The Prospeed's case feels sturdier than most. The handle is solid and well-padded; the display hinge works smoothly and holds the display firmly in place. All circuit boards and connectors are solidly mounted.

NEC provides a one-year warranty that covers parts and labor. Service is provided through authorized dealers or directly from NEC, though the information included with the machine does not say how to contact NEC directly. There is no fast turnaround or loaner plan. Support is provided through authorized dealers only.

The Prospeed CSX with a 40M-byte hard disk lists for \$8,499. Lower priced and better performing machines raise serious questions about the novelty of the Prospeed CSX's less-than-perfect color display. The color display may be unique and very impressive at first, but in the long run it is harder to look at than competitive monochrome displays.

NEC Information Systems, 1414 Massachusetts Ave., Boxboro, Mass. 01719. (800) 632-4636.

Xtree Pro Gold shell has wealth of features

Xtree Pro Gold from Xtree Co. is one of the most comprehensive and flexible DOS shells available. In addition to all the standard file-manipulation features, it contains some unique capabilities. Users can quickly configure the screen to display different types and levels of information. For example, a directory tree diagram can be displayed in one window with the files shown below it, or two trees or directories

can be viewed and worked with simultaneously.

Like Norton Commander, Xtree Pro Gold features intelligent file viewers as well as point-and-shoot data file capability and keeps only a small kernel in memory when applications are run from it. It includes a built-in text editor that can handle files up to 60K bytes.

An extremely handy feature lets users log multiple drives and

work with all the files as a group. There are also features for hiding directories and files, stamping selected files with a specific time and date, wiping out an erased file so it cannot be recovered using a file unerase utility and entering up to 16 file specifications to filter the files displayed.

No nesting allowed

A user menu can be set up to run applications or perform "batch" type operations. However, the menu is able to accommodate only 13 entries, and the program does not support nested menus.

Compared to Norton Commander [review on page 52],

Xtree is more limited in the number of file viewers it offers. Both products feature a dynamic viewing mode that instantly dis-

text view, then offers the option of displaying the file in its native format.

Unlike Norton Commander, Xtree's spreadsheet viewer duplicates 1-2-3's status line so that it displays the actual formulas in each cell, as well as the formats.

Yet another option in the viewer turns on automatic scrolling so users can read a file without touching the keyboard. While viewing one file, it is possible to append selected parts to another file.

Somewhat surprisingly, Xtree does not allow users to move files across disks, nor is it

Continued on page 50

Xtree Pro Gold Version 1.3

Price: \$129

- Performance: Very good
- Documentation: Good
- Ease of learning: Very good
- Ease of use: Very good
- Error handling: Very good
- Support: Good to very good
- Value: Excellent

plays the contents of a file as the user scrolls through a file list, but for word processing files, Xtree Pro Gold defaults to a plain

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Wacom's tablet and pen draw raves

BY RICHARD PASTORE
CW STAFF

A new digitizing tablet for the Apple Computer, Inc. Macintosh derives both its biggest advantage and disadvantage from the same feature: its cordless, lightweight "pen."

The stylus feels so much like an ordinary pen that it is a pleasure to work with, users said. But the Wacom, Inc. product's close resemblance to an ordinary pen subjects it to the same frequent mislocations that beset your average ballpoint.

"The thing's very comfort-

able, but it disappears too easily," said Doug Cook, senior software engineer at Truevision in Indianapolis.

The pen derives its power from contact with the digitizing tablet rather than from an on-board battery, making it lighter than most cordless pens. It

weighs one-third of an ounce.

Aside from the pen's fondness for making itself scarce, users said the tablet is relatively trouble-free. "Most tablets don't quite work the way the manual says they will; they are hard to communicate with. This one works flawlessly," said Cook, who develops graphical software using digitizing tablets.

The stylus also recognizes de-

grees of hand pressure; it will respond by painting thicker or thinner lines on the screen. This sensitivity allows graphics designers to draw variable-width strokes for a more natural look, said John Derry, director of creative services at Time Arts, Inc. in Santa Rosa, Calif.

The tablet, which began shipping in volume last month, is available in a 12- by 17-in. desktop version and a 6- by 9-in. laptop version. The products cost \$1,345 and \$495, respectively.

The tablet is designed to work with any Macintosh more powerful than the Mac Plus. It supports all graphics software packages, the vendor said, but only a handful are now available that support the pen's pressure sensitivity.

Xtree

FROM PAGE 49

possible to compare two directories and tag any differences. However, users can display a sorted list of files with the same extension, regardless of the directory they reside in.

Xtree's comprehensive manual is augmented with a useful context-sensitive on-line Help system that includes a topic index.

Running the official installation program is mandatory, since it expands some compressed files on the distribution disk. Experienced users who like to tinker around will be able to learn most of this product without even opening the manual. Novice users, on the other hand, may be overwhelmed by the sheer number of features and options — not to mention the somewhat confusing menu system that changes depending on what you are doing.

Like Norton Commander, Xtree Pro Gold works equally well with a mouse or keyboard. The menus are set up with single-letter mnemonic commands.

Xtree Pro Gold also handles errors well and takes necessary precautions when the user attempts to do something drastic.

The company provides a toll-free support line, which is staffed from 8 a.m. to 5 p.m. PST. The technicians are courteous and knowledgeable. To encourage product registration, the company sends a file archive utility when it receives your registration card. Xtree Pro Gold retails for \$129, but users of a previous version can upgrade for \$25.

While it is not quite as elegant or straightforward as Norton Commander, Xtree Pro Gold is brimming with well-thought-out file management extras. However, users should be prepared to spend some time becoming acquainted with all the intricacies.

Xtree Co., 4330 Santa Fe Road, San Luis Obispo, Calif. 93401. (805) 541-0604.

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Norton 3.0 commands respect with easy mastery

Improved integration, built-in text editor, point-and-shoot ability in updated version

Peter Norton Computing, Inc.'s Norton Commander is a DOS shell/file manager that is based around two separate "panels." Each panel can contain a list of files that allows the contents of two directories to be seen simultaneously. Optionally, the panels can contain a tree diagram of a disk or the contents of the file highlighted in the other panel.

Aside from all the common file manipulation functions, Norton Commander lets users set up menus, which can be nested. When an application is run from Norton Commander, only a 13K-byte kernel re-

mains in memory, so there is very little overhead involved.

New to Version 3.0 is the ability to change file attributes, a timed screen blanker and improved integration between the tree display and the file list shown in the opposite panel. There is also a built-in text editor and a point-and-shoot capability for handling data files. Other new features include the ability to send and receive MCI Communications Corp.'s MCI Mail and to move groups of files between two systems using a null modem cable.

Version 3.0 also provides intelligent viewers for most popular applications, including Lotus Development Corp.'s 1-2-3 and Ashton-Tate Corp.'s Dbase. The view option shows the contents of the file as they would appear in the original application. Users can scroll through a list of files, stopping to display the contents of the current file with the appropriate file viewer.

For spreadsheets and database files, Norton Commander selects the file viewer based on the file's extension. For word processing files, the program examines

the text and selects the right viewer.

Norton Commander's 200-page manual has been rewritten and, thanks to the plentiful illustrations, is much more attractive and readable than before. It is well organized, and its informal and sometimes humorous style makes it a pleasure to read.

The on-line Help system, which was rudimentary in previous versions, has been expanded significantly. It is now context-sensitive and features a topic index. Each Help screen includes a refer-

Norton Commander Version 3.0

Price: \$149

- Performance: Very good
- Documentation: Excellent
- Ease of learning: Excellent
- Ease of use: Excellent
- Error handling: Very good
- Support: Good to very good
- Value: Excellent

ence to the manual for further discussion.

The package includes both 5¼- and 3½-in. disks. Anyone who has used a previous version can get the program up and running in a matter of minutes. The installation program handles all the details, even placing the previous version in a backup directory.

A novice can have this product essentially mastered in a few hours, while an experienced PC user could master it in an hour or less. In fact, except for the MCI Mail module, an experienced user can probably learn the program using only the three-page quick-start section of the manual.

ANYONE WHO HAS used a previous version can get the program up and running in a matter of minutes. The installation program handles all the details, even placing the previous version in a backup directory.

The user interface is intuitive and unobtrusive and is equally accessible by mouse or keyboard. It is designed so that the DOS prompt is always available. Like Version 2.0, this latest release features a pull-down menu system. A few new menu options have been added, but the commands are compatible with the previous version.

Norton Commander also handles error conditions gracefully — an improvement over DOS in some areas. For example, it will not blindly overwrite an existing file with the Copy command. Typically, a bright red window is displayed with an explanation of the error or warning.

Unlimited, but not toll-free, phone or facsimile support is available weekdays from 7 a.m. to 5 p.m. PST. The technicians are knowledgeable, efficient and friendly.

Norton Commander 3.0 retails for \$149 — up from the \$89 price for Version 2.0. While the price may appear to be a bit steep for a utility, this is a habit-forming program that will be used daily.

Peter Norton Computing, 100 Wilshire Blvd., 9th Floor, Santa Monica, Calif. 90401. (213) 319-2010.

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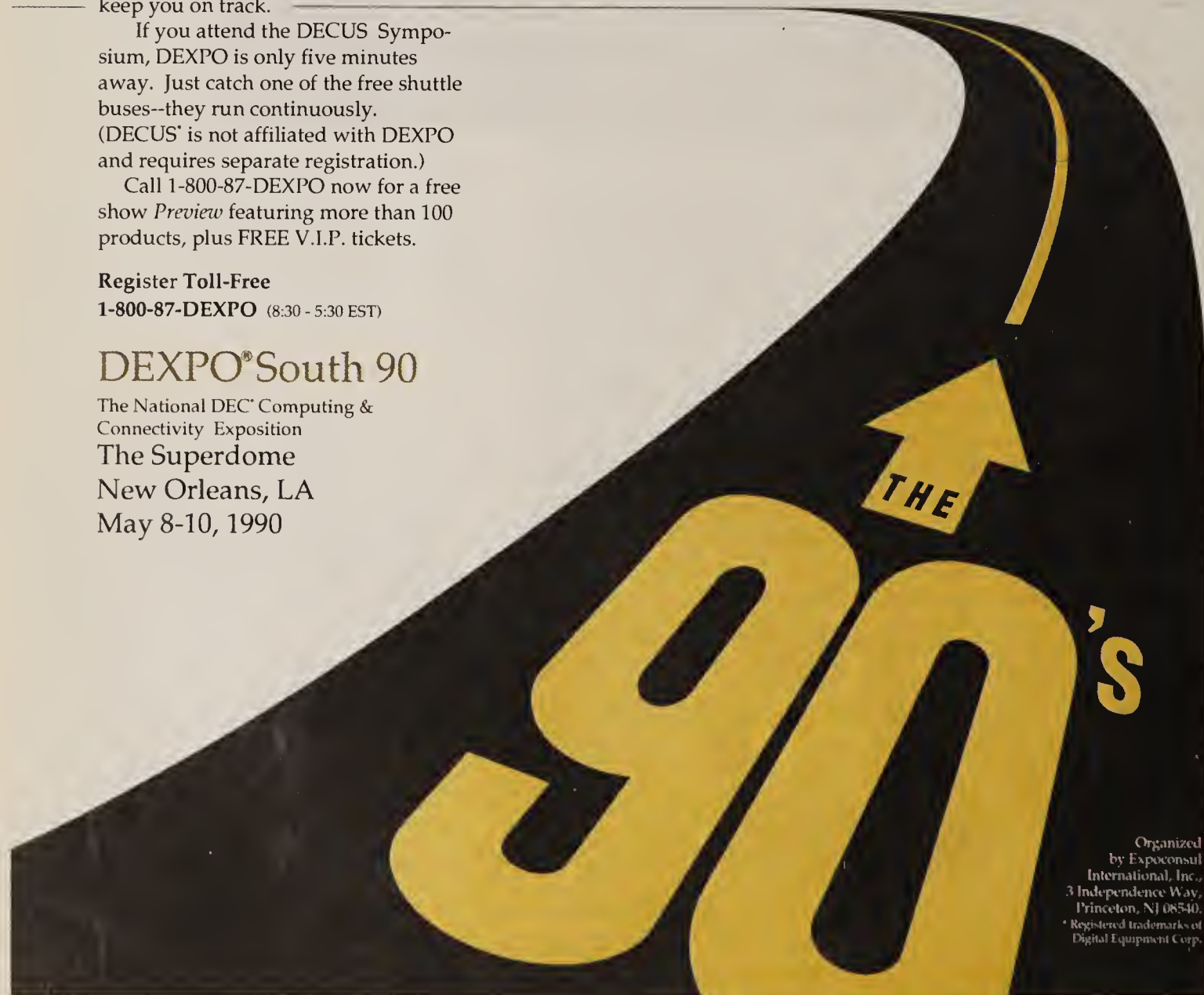
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Firms press for openness at Seybold

BY RICHARD PASTORE
CW STAFF

BOSTON — Although this month's Seybold Professional Publishers Conference lacked the fireworks that sparked last fall's gathering, it did feature trends in openness and third-party support for new hardware platforms.

The charge toward openness was led by Adobe Systems, Inc. At the last Seybold conference, Chief Executive Officer John Warnock concluded his lambasting of rivals Apple Computer, Inc. and Microsoft Corp. by pledging to publish the specifications of Adobe's Postscript Type 1 fonts.

Adobe kept its promise at this month's conference. The Type 1 specifications fill a 102-page book, which the company was peddling for \$14.95 at its conference booth.

Only half the secret

The publication of the book "opens us up to increased competition," admitted Chuck Geschke, Adobe's president and co-founder. However, he added that the specifications only describe the end products, or fonts, not how to generate them.

This omission of a key aspect was not lost on Microsoft, which is developing a rival font technology with Apple called TrueType. "Only Adobe can improve on Postscript because their rasterizer [the font-generating technology] is not open," said Steve Ballmer, vice-president of systems software at Microsoft. According to Ballmer, TrueType's rasterizer technology will be open.

Openness was also on the mind of Atex Publishing Systems, which announced an open-interface strategy at the conference. Atex, which has computer-aided publishing systems installed at more than 750 newspapers worldwide, said third-party vendors will be able to interface their products with Atex's traditional systems as well as with its Total Publishing Environment.

The company will initially target third-party vendors of imaging and display advertising workstations. It has launched a third-party marketing program to direct these efforts.

Third-party support

Also at the show, some new as well as not-so-new products received support boosts from third-party desktop publishing vendors.

A number of vendors threw in their lots with Hewlett-Packard Co.'s new Laserjet III. Extended Systems, Inc., based in Boise, Idaho, unveiled a printer-resident spooler that provides simultaneous access to the printer's

desktop publishing and graphics capabilities to as many as four users. Available immediately, the product is priced at \$845.

Insite Development Corp. in Emeryville, Calif., ported its Macprint and Lasercontrol device management software products to the Laserjet III. Macprint

will provide connectivity between Apple Macintoshes and the Laserjet III. Lasercontrol allows older DOS-based applications to support the laser printer.

Both products are currently available and priced at \$149 each.

Steve Jobs' Next, Inc. workstation, which has gotten off to a slow start because of application delays, has added several new sources of support since last month. At the Seybold show, Next demonstrated a new scanner introduced by HDS Microcomputer U.S., Inc. in Mountain View, Calif.

The Scan-X 600 is an 8-bit scanner with a resolution of 600

dot/in. for line art and 300 dot/in. for gray-scale images.

HDS is positioning the scanner, which costs \$2,220, as an affordable approach to scanning for mainstream Next users. The product will be available at Businessland, Inc. computer stores next month, HDS said.

West Coast Senior Correspondent Charles von Simson contributed to this report.

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Sensing a whole lotta shakin' going on

ON SITE

BY JAMES DALY
CW STAFF

ARLINGTON, Va. — From tremors that rattle dishes and nerves to rapid geological plate shifts that topple freeways, the unpredictable and savage nature of earthquakes seems second only to shark attacks in its ability to intimidate man.

However, a recently expanded worldwide network of ground sensors and Sun Microsystems, Inc. workstations may not only go a long way toward giving scientists a better picture of how and why the temblors rock our world but may ultimately help to determine when the next shake will occur.

"We still can't tell you whether there is an earthquake coming tomorrow, but we're working toward it," said Tim Ahern, program manager for data management systems at the Incorporated Research Institute for

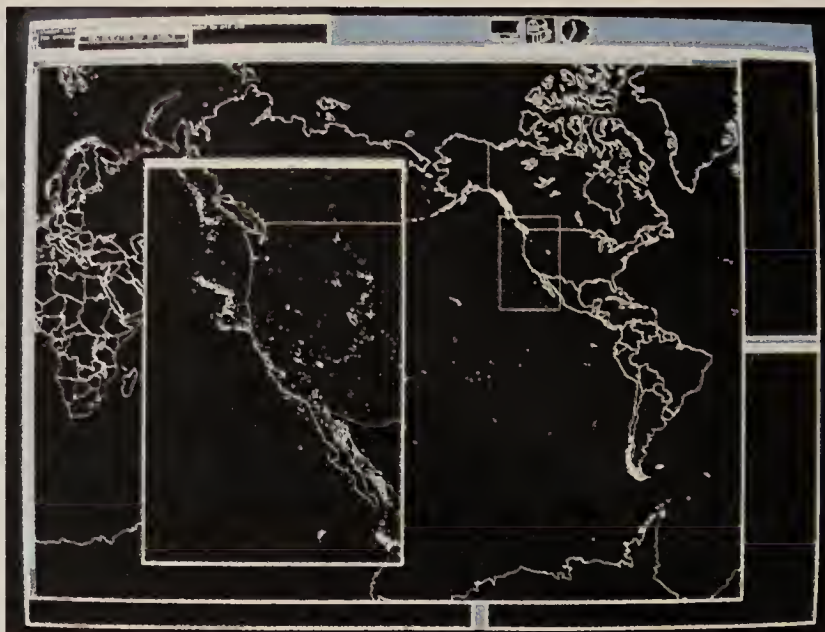
Seismology (IRIS), a nonprofit consortium of graduate-level seismology programs from 68 U.S. universities.

Ahern and a team of seismologists work by gauging the patterns of the past to predict the possibilities of the future. As such, they need to gather a tremendous amount of seismological information. IRIS has about 20 highly sophisticated ground sensors installed throughout the U.S. and can tap into a larger network of sensors installed in remote areas as far away as China and the South Pole.

Twenty times per second the sensors measure the movement of the ground, calibrating the velocity of their particular patch of terra firma for north/south, east/west and vertical shifts. The monitoring occurs 24 hours a day, 365 days a year, with the stations recording as many as 20 channels of seismic information in different frequency bands. "No one has ever tried to archive that much data before,"

Ahern said, adding that memory requirements for the data collection will reach a terabyte per year in the future.

of two data collection centers in Albuquerque, N.M., and San Diego where they are checked for quality.



Seismologists are using Sun-3s to understand quakes

When the Earth shakes and rattles, the system rolls. The seismograms are recorded on magnetic tape, then sent to one

Following the examination, the data is forwarded to the IRIS archives at the Center for High Performance Computing at the

University of Texas in Austin.

The on-line archival station uses four Sun-3 workstations linked by an Ethernet to an IBM 4381 mass storage system. Before entering the data, an operator summarizes each seismogram on a table of contents. In this way, IRIS users can study the summary information without having to access the seismograms directly.

Until recently, such a sophisticated level of data gathering could take as long as two years. With the IRIS system, a researcher simply has to tap in a list of the seismological stations and the time frame he wishes to view, and the information appears in a matter of minutes.

A typical user may retrieve information from a hundred million samples. "Most seismologists aren't interested in earthquakes just because they occur," Ahern said. "They want to gather data over many, many years and try to look at the larger picture. This is exactly the kind of information researchers need to draw the probability curves for predicting the likelihood of an earthquake."

Keefe

FROM PAGE 47

of software."

You only have to look at the various soap operas currently unfolding across the desktop landscape to see what he means:

- Microsoft and Apple Computer surprise the industry when they team up to promote Apple's TrueType outline font format. A miffed IBM follows up by casting its vote for outraged Adobe Systems' Postscript Type 1 fonts, the de facto standard in type technology, anointing it with the Systems Application Architecture (SAA) stamp of approval.

- Microsoft and IBM stand up together at Comdex/Fall '89 and swear undying cooperation on the operating system front. The duo kiss and make up publicly, promising to offer only one OS/2 development kit from now on. A repentant IBM says it will make its LAN Manager-based server compatible with Microsoft, which responds magnanimously by agreeing to keep Windows in its place.

- In February, Microsoft says that OS/2's overhead is really not a key issue. IBM executives insist just the opposite.

- Fast forward to March, when Microsoft says it will offer TrueType support under OS/2 Presentation Manager 2.0.

- Jumping ahead to May, we catch the unveiling of Microsoft founder Bill Gates' pride and joy — Windows 3.0, which is more than capable of slowing the turtle-like migration to OS/2 to a virtual halt.

What's wrong with these

pictures? At first glance, there's an obvious lack of consensus on what should be the industry standard for fonts and a lack of agreement on operating system emphasis and design. Why wouldn't users be hesitant?

However, these are symptomatic of an underlying and ongoing problem: The enduring IBM-Microsoft relationship, forever rumored to be on the rocks, is said to be at its weakest point ever. Both vendors re-

THE enduring IBM-Microsoft relationship, forever rumored to be on the rocks, is said to be at its weakest point ever.

portedly would like to lessen their dependency on each other — a sure sign of marital discord — and more and more, it looks like they may be doing something about it.

If you look at the scenarios outlined above, it looks like Gates is rubbing IBM's nose in the dirt half the time. "It's like [Alexander] Haig at the White House," cracked one developer.

How can Microsoft seek to allay user fears about diverging OS/2s by promising to unify OS/2 development efforts and then announce plans to incorporate support for a font standard that is not IBM's first choice into OS/2?

As for Windows, it's pretty obvious that despite all the hype and marketing push behind

OS/2, Microsoft is no less wedded to DOS than it ever was. Microsoft hasn't even released Windows 3.0, and already it is talking about another, future version of Windows.

"Windows is Bill's most dominant software business, which is why Windows applications are a priority," said the developer. Gates has exclusive control over Windows, not DOS or OS/2, he added.

IBM, too, makes plenty of dough off DOS-based sales, but the fact remains that OS/2 is the foundation on which SAA will be built, and nothing comes before SAA for IBM. So IBM can't be overjoyed at the prospect of Windows 3.0 and 4.0 carrying DOS into the near future.

"Microsoft is trying to convince IBM that it doesn't matter if it takes six years for OS/2 to become popular, but that [attitude] doesn't help people trying to decide between the two environments," the developer said.

The result is a lot of mixed messages warning users to "Forget what I say, watch what I do," if not outright forcing them to pick sides for safety's sake.

"It's childish the way [IBM and Microsoft] are going at each other," griped the developer.

At the moment, Microsoft seems in control. IBM will support TrueType, and developers have already begun to emphasize Windows at the expense of OS/2. It seems Microsoft wants OS/2 to win but not just yet. Users forced the IBM/Microsoft get-together at Comdex/Fall. Perhaps now they should force both to find a message both can agree on and to then stick to it.

Calculator sports PC plug

BY J. A. SAVAGE
CW STAFF

A \$350 calculator introduced by Hewlett-Packard Co. early this month can reportedly be attached to an IBM Personal Computer or Apple Computer, Inc. Macintosh to save users the expense of an integrated math coprocessor.

Called the HP 48SX, the calculator is a little longer than a normal handheld calculator, but it has a large display, according to HP. With the addition of a standard cable and communications software for \$60, the calcu-

lator can be plugged into a PC.

It can then be programmed from the PC and can access the PC's printer and disk drive. If a user wants to prepare calculations as part of a report, for instance, the calculator will crunch numbers while the user is working with other applications.

When the math is ready, it can reportedly be dumped into the report through the use of a window. This function uses only the calculator's memory.

In addition to functioning as a high-level math calculator, it integrates math and calculus into graphics, the company said.

Roller coaster

FROM PAGE 47

revenue flames:

- High-end, high-performance PCs and technical workstations are selling like crazy. Compaq reportedly has already sold 4,000 Systempros, which sell for about \$20,000 at the low end, according to Merrin, whose company, based in Palo Alto, Calif., specializes in distribution and marketing issues.
- Sales of laptop and notebook computers have remained very hot, while vertical market-associated sales have been heating up, according to John Venator, who heads up ABCD: The Microcomputer Industry Association.
- A rash of price cutting in the last quarter has pried open some wallets.
- Intel Corp. claimed record sales of 386SX and DX micro-

processors, according to Donaldson, Lufkin & Jenrette.

Still, sales overall are down and for good reason, said some pundits. "There is definitely a slump," scoffed David Korus, an analyst at Kidder Peabody & Co., who is predicting a tough first half.

Paying the price

Among the reasons typically cited for stunting sales growth were the following:

- Migration to 80386-based PCs is not happening as fast as might be expected, while 286 sales have slowed. Also, price pressure has begun to hit the 25-MHz 386 segment, said Barbara Isgur, a Needham & Co. analyst.
- Clonemakers will come back and take share away from the "big guys," Korus said.
- The lack of robust applications capable of taking advantage of still evolving operating systems.

NEW PRODUCTS

Software utilities

Alpha Software Corp. has upgraded Alphaworks, its software package that integrates five commonly used IBM Personal Computer and compatible applications: word processing, database management, spreadsheet analysis, graphics and communications.

Version 2.0 offers several relational database functions as well as user-defined menus and a file viewer facility. The program is priced at \$195, and upgrades are available for \$49.

Alpha Software
1 North Ave.
Burlington, Mass. 01803
617-229-2924

Data storage

Plus Development Corp. has introduced the Hardcard II 40 and Hardcard II 80 19-msec hard-disk cards.

A single 1-in. card contains 40M or 80M bytes of mass storage and combines a 3½-in. disk drive and fully integrated controller electronics on a single card, the company said.

The two models feature a proprietary Defect Free Interface, which provides a user-transparent method of mapping bad disk sectors before data is endangered, the company said.

Both versions offer a 60,000 mean-time-between-failure rating as well as a two-year warranty. Hardcard II 40 and Hardcard II 80 are available through authorized resellers for suggested prices of \$849 and \$999, respectively.

The company also announced new prices for its first-generation Hardcard 20 and Hardcard 40. The products sell for \$749 and \$849, respectively.

Plus Development Corp.
1778 McCarthy Blvd.
Milpitas, Calif. 95035
408-434-6900



Plus Development's Hardcard II 80 offers 80M bytes of storage

Board-level devices

Corvus Systems, Inc. has announced an enhancement card that boosts DOS-accessible memory from 640K bytes to 704K bytes.

Readyram adds 64K bytes to usable DOS memory by enabling DOS to access memory at A0000 and AFFFF addresses, memory that is usually reserved for video display, the vendor said.

The 3¼- by 3.67-in. device fits easily into an expansion slot, and its non-memory-resident software will not conflict with other DOS programs.

The product is reported to be available now to Corvus dealers and distributors with a suggested price of \$99.

Corvus
160 Great Oaks Blvd.
San Jose, Calif. 95119
408-281-4100

ICS Datacom, a division of ICS Electronics Corp., has introduced a personal computer extender card for testing and debugging printed circuit boards without threat to the computer's circuitry.

The PC-EXT board requires a two-thirds size card slot and can be left in the PC when the cover is closed, the firm said. Operation is controlled via a two-position toggle switch.

The card costs \$295, with delivery

two weeks after receipt of order.

ICS Datacom
2185 Old Oakland Road
San Jose, Calif. 95131
408-432-9009

Cardinal Technologies, Inc. has introduced a 16-bit Video Graphics Array card for IBM Personal Computers and compatible systems.

The VGA 400 fits into a single expansion slot and is capable of providing as many as 256 simultaneous colors from a palette of 256,000, the vendor said. A video mode selection utility and a diagnostics utility are also included.

The board is priced at \$279.

Cardinal Technologies
1827 Freedom Road

Lancaster, Pa. 17601
800-233-0187

Claiming to provide increased graphics power on IBM Personal Computer AT/386s, Lazerus has announced the Expressway board, which is designed to offer 67 to 80 million floating-point operations per second and a 32-bit reduced instruction set computing processor. The product features image calculations at 96 bits per pixel.

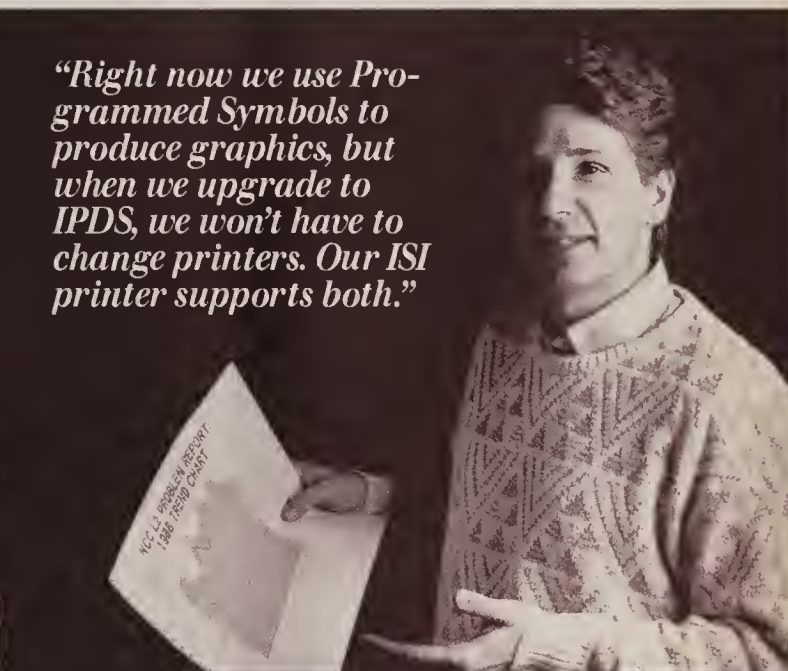
Memory upgrades are available from 2M bytes in 2M-byte blocks, and prices start at \$5,000.

Lazerus
2821 Ninth St.
Berkeley, Calif. 94710
415-845-1238

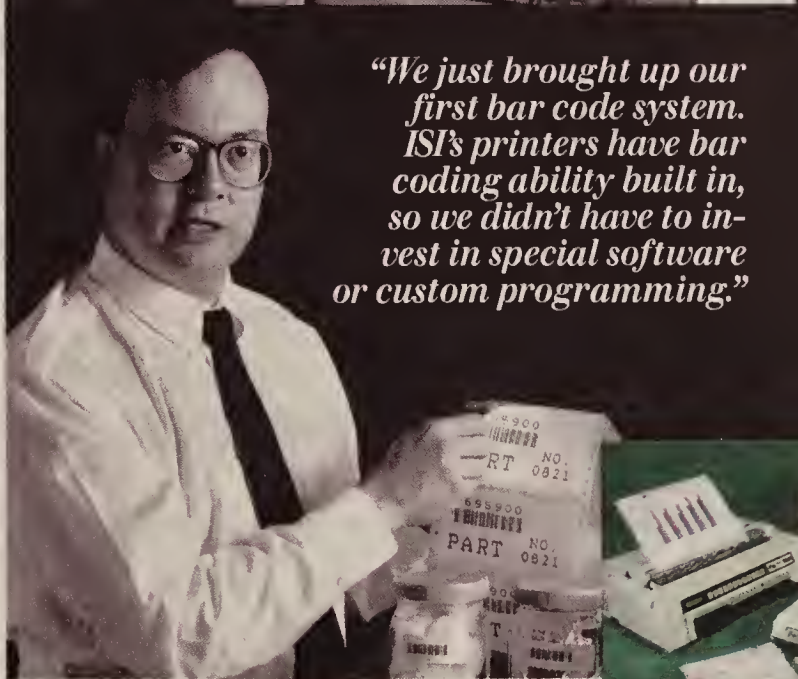
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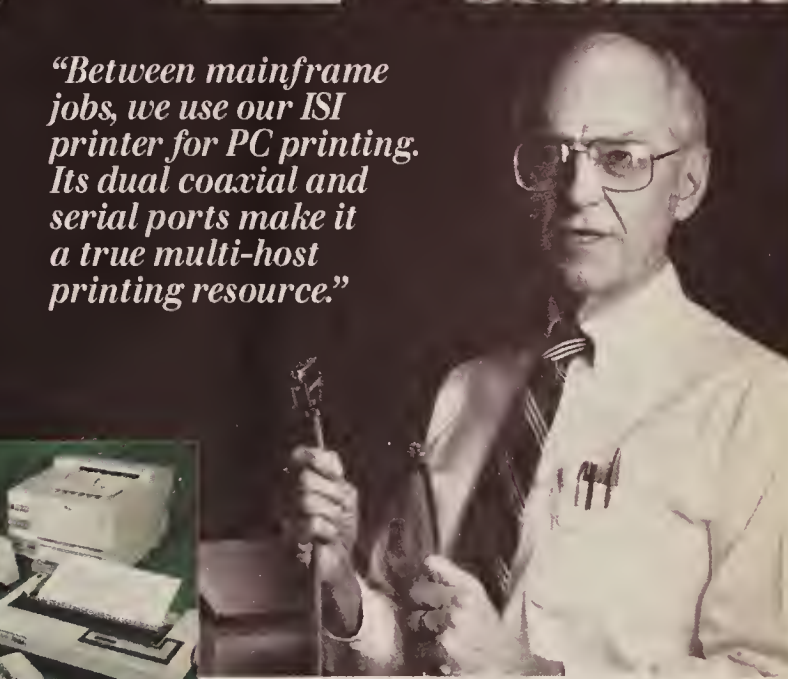
"Our requisition form could choke an ordinary printer. It's six-parts thick, with peel-off labels on the top sheet. Yet it's no problem for our ISI printers."



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Avatar.

DATA STREAM

Elisabeth Horwitt

Much ado about LANs



Much has been made of the technical difficulties of moving critical applications from mainframes down to LANs. Skeptics claim that LAN servers don't have the horsepower or the maintenance and backup utilities necessary to adequately support those humongous number-crunching financial applications. Airline reservation systems are another popular example of a mainframe-only application.

Yet companies that have actually made the move — including an insurance company and a Fortune 500 auto parts firm but not, admittedly, an airline — claim that once they had full backing (and financing) from management, they bought or developed the systems they needed to support even the most heavy-duty applications.

The technical obstacles to downsizing are disappearing, but potholes remain on the people side — specifically, how to get IS and users to cooperate rather than thwart the move to LANs and to work together harmoniously in the new environment.

The first challenge in this area is keeping your IS department

Continued on page 61

'I'll see you in court'

Industry knows EDI lawsuit is a matter of time

ANALYSIS

BY ELLIS BOOKER
CW STAFF

Electronic data interchange (EDI) has yet to undergo a *rite de passage* to make it an accepted business practice. That event is a lawsuit.

"I'm expecting that in the next 18 to 21 months, an EDI application will wipe out some distributor and someone will sue someone," said Lee Gruenfeld, a partner at Deloitte & Touche in Los Angeles. "The industry is holding its breath for a lawsuit," agreed the EDI director at a major national retailer.

For now, there exists no case law or precedent dealing specifically with EDI, which raises concerns about what happens in such instances as when buyers

claim they never ordered the 5,000 widgets that a distributor packaged and shipped.

Observers disagree about whether that legal vacuum has contributed to the sluggishness with which U.S. companies have moved to EDI, a technology for transmitting documents electronically that first appeared in the 1960s.

Model document

At a Dallas conference last month, the American Bar Association presented a model EDI trading document. The document contains nearly two dozen legal provisions that attempt to clarify basic questions, such as which party is responsible if an EDI message is transmitted but not received.

The document also recommends that companies specify

Partners in trade

Some large EDI users state they have had minimal trouble with EDI partnership agreements.

Ford Motor Co., for example, has not sought a separate EDI contract, believing existing trading rules cover this electronic medium.

At Sears Merchandise Group in Chicago, the EDI trading partner agreement is a standard boilerplate under two pages long. According to Lance Dailey, director of EDI implementation at the Merchandise Group, the company's legal and auditing departments cooperated in the drafting of an amendment, which is signed by Sears and its trading partner on the day that EDI traffic begins between the two.

One of the largest EDI users in the country, Sears is adding 50 partners each month. According to Dailey, the company now has 165 links to customers and suppliers using the ANSI X12 protocol, with another 270 partners "exchanging test data." Another 700 trading partners, now using Sears' proprietary EDI format, are being migrated to the ANSI X12 standard, Dailey said.

ELLIS BOOKER

whether a recipient's acknowledgment represents acceptance of an electronic document.

There are an estimated 6,000

to 10,000 EDI users in the U.S., according to the Electronic Data Interchange Association, a trade

Continued on page 58

Pioneer Echlin's downsizing payoff

ON SITE

BY ELISABETH HORWITT
CW STAFF

BRANFORD, Conn. — In the mid-1980s, when the IBM Personal Computer AT was considered a high-end PC, Echlin, Inc. became one of the first Fortune 500 companies to decide to entrust all of its mainframe-based applications to local-area networks.

The benefits were well worth the risks of becoming a downsiz-

ing pioneer, according to the auto parts manufacturer's director of information systems, Richard Hock. In the intervening five years, Echlin's IS budget has shrunk 38% from \$920,000 to \$570,000 per year.

The IS department has shrunk as well: Originally 13 people, the staff now comprises one half-time and three full-time programmers and two network operators.

The only glitches along the road have been minor, Hock said. In fact, Echlin is consider-

ing abandoning its hardware maintenance contracts "because we have PC redundancy, and in the last five years, the only hardware problems we've had on the LAN have been two disk drive and one LAN board failure," Hock said.

Some other MIPS

A senior program analyst, Steven Gold, conceived of the original downsizing idea while perusing some Datapro reports on the IBM PC AT. Gold recalled reading with disbelief a 1.54 million

instruction per second (MIPS) rating for the 80286 processor: "I thought it was a misprint, or that they were talking about a different type of MIPS."

Gold's next revelation came when he viewed a Novell, Inc. LAN in operation at a microcomputer users meeting. At this point, Gold said, he began to believe in the feasibility of "replacing the mainframe with LANs and saving hundreds of thousands of dollars in the process."

After getting his boss interested, Gold ran some benchmark tests on the AT and Echlin's IBM 4341 to determine whether the

Continued on page 62

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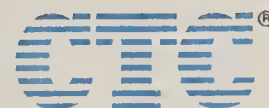
```
EDIT1 0 SCORL SOURCE DFHMCALL COB
COMMAND -> F P CICS a b
000062 FIN
000063 GO TO CICS-CONTROL.
000064 READ-INPUT
000065 EXEC CICS HANDLE CONDITION NAFPAI(NOTPROF) NOTEND(NOTFOUND)
000066 ERROR(ERRORS) DUPREC(DUPREC) END-EXEC.
000067 EXEC CICS RECEIVE MAP('XDFHMCB') END-EXEC.
000068 IF EIBTRN10 = 'UPDT' THEN
000069 EXEC CICS READ UPDATE DATASET('FILEA') INTO(FILEA)
000070 RIOPLO(NUMB IN COMMAREA) END-EXEC
000071 IF FILEREC IN FILEA NOT = FILEREC IN COMMAREA THEN
000072 MOVE 'FILE ALREADY UPDATED - REENTER' TO MSG10

EDIT2 0 SCORL SOURCE DFHMCALL COB
COMMAND -> F P CICS a b
000062 FIN
000063 GO TO CICS-CONTROL.
000064 READ-INPUT
000065 EXEC CICS HANDLE CONDITION NAFPAI(NOTPROF) NOTEND(NOTFOUND)
000066 ERROR(ERRORS) DUPREC(DUPREC) END-EXEC.
000067 EXEC CICS RECEIVE MAP('XDFHMCB') END-EXEC.
000068 IF EIBTRN10 = 'UPDT' THEN
000069 EXEC CICS READ UPDATE DATASET('FILEA') INTO(FILEA)
000070 RIOPLO(NUMB IN COMMAREA) END-EXEC
000071 IF FILEREC IN FILEA NOT = FILEREC IN COMMAREA THEN
000072 MOVE 'FILE ALREADY UPDATED - REENTER' TO MSG10
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EDI lawsuit

CONTINUED FROM PAGE 57

group in Alexandria, Va. This number includes EDI links between companies and institutions as well as within companies and government agencies. A recent survey by the EDIA found that although interest in EDI is high, most applications are part of limited pilot projects.

EDI proponents noted that there is a body of law concerning the paperless transmission of documents — notably by telex and, more recently, facsimile — and that these court decisions will be called in to support the legitimacy of EDI when it eventually faces its first legal challenge.

"The fundamental question is one of

evidence," explained Benjamin Wright, an independent Dallas attorney and author of *EDI and American Law: A Practical Guide*.

"EDI and electronic mail are bits and bytes," Wright continued, and without the proper controls "the recipient can change the message." For this reason, he said, a judge would have little use for a printout brought into the courtroom.

Wright noted that there are few standard guidelines for the control of paper documents, much less electronic ones.

"The way those problems in the paper world get answered is that you bring in consultants," Wright added. "The [auditing and security] standards will vary, and you wouldn't want the same controls for a \$1 billion contract as for a \$25 purchase

order." However, Wright is adamant that these legal issues can be addressed today.

To protect themselves from litigation, companies have been negotiating so-called EDI trading partner or interchange agreements with one another. Among other functions, the agreements spell out the terms and conditions governing the trading relationship that, in the paper world, are printed on the back of purchase orders and invoices.

However, these trading partner agreements often stop "when they hit the desk



Attorney Baum chairs EDI law committee

of the corporation's general counsel, who simply has not encountered them before," said Michael Scott Baum, a Cambridge, Mass.-based lawyer. Baum chairs an EDI committee within the American Bar Association as well as the Legal and Control Issues Task Group of the Accredited Standards Committee X12.

Users complained that negotiating a single trading partner agreement can

take upwards of two years.

At the Dallas conference, Baum and others addressed the legal implications of EDI. Titled "EDI: Letters of the Law," the two-day meeting attracted nearly 350 participants. The meeting was co-sponsored by the X12 group and the National Institute of Standards and Technology in cooperation with the ABA's science and technology section.

While the ABA proposal seeks to help trading partners stipulate many things before they commence sending one another EDI messages, "It's only a model and should be used as a starting point for negotiations," said Baum, who is one of the model's creators.



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International ISDN displayed

BY JOANIE M. WEXLER
CW STAFF

About 20 U.S. and Japanese companies recently experienced a simulation of international Integrated Services Digital Network (ISDN) videoconferencing and Group 4 facsimile services during a demonstration involving Pacific Bell Telephone Co., AT&T, Nippon Telegraph and Telephone Corp. and Kokusai Denshin Denwa Co.

Offices in Los Angeles and Tokyo were connected to local ISDN lines via ISDN terminal adapters; the local networks linked into AT&T's 56K bit/sec. Switched Digital International Service. The video, traveling at a compressed data rate of 112K bit/sec., required two 56K bit/sec. international lines.

"This was a way to show customers the benefits of using ISDN internationally before we have clear-channel [SS7] capability," noted Claire Oshetsky, director of the Scientific Knowledge Department at Pacific Bell.

Signaling System 7, or SS7, is an emerging international ISDN standard that allows called and calling numbers to travel on separate paths and allows local-exchange carriers' networks to connect with long-distance networks.

While switched 56K bit/sec. service is "an effective way to connect ISDN 'islands,'" Oshetsky said, there will be benefits to using global ISDN to link those islands, according to AT&T spokesman Bill Weiss. The advantages lie in line and cost economies and standards, not necessarily in new services, he said: "Internationally standard ISDN would work on any outlet and would give you enough bandwidth to combine several services — such as voice, high-speed facsimile and caller display — on one dial-up line."



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April 11	Anaheim, CA	Marriott Anaheim
April 12	Burlingame, CA	Sheraton S.F. Airport Hotel
April 25	Minneapolis, MN	Vista Marquette
April 26	Southfield, MI	Radisson Plaza Hotel
April 27	Schaumburg, IL	Hyatt Regency Woodfield
May 1	New York, NY	Vista Hotel
May 2	Fair Oaks, VA	Holiday Inn Fair Oaks
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ICA joins legal battle to keep Bells' freedom from ringing

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The International Communications Association (ICA), the largest of the telecommunications user groups, has joined the vendor community to fight legislation that would allow the regional Bell holding companies to compete in the long-distance, information services and equipment manufacturing markets.

Users fear that freeing the monopoly telephone companies to enter those markets would eventually stifle rather than enhance competition in the telecommunications industry, said Brian R. Moir, the ICA's counsel, at a recent press conference. "We'll end up with less choice, not more choice," he predicted. "That's the concern that brings the user community to the table."

Moir said that the current legislative vehicle, a draft bill prepared by the staff of

the House Subcommittee on Telecommunications and Finance [CW, Feb. 19], has inadequate safeguards to prevent the Bell operating companies from using unfair tactics to drive competitors out of business.

Under the 1982 AT&T divestiture accord administered by U.S. District Judge Harold H. Greene, the Bell companies are prohibited from offering interexchange transmission and information processing services and designing or manufacturing telecommunications equipment. Greene has refused to lift the restrictions on the grounds that the Bell operating companies retain "bottleneck" control over the local exchange and could use that power to harm competitors.

In addition to concerns about monopoly

power, Moir said ICA members are concerned that the draft legislation would transfer regulatory authority over the Bell companies' business ventures from Greene to the already overburdened Federal Communications Commission.

"The legislation that's proposed does nothing to solve business users' existing [regulatory] problems at the state and federal levels. And it would only exacerbate that problem by expanding the responsibilities of the commission" at a time when the FCC has inadequate resources for its existing duties, Moir said.

Proponents of the legislation have argued that the FCC is capable of preventing abuses by the Bell companies and that those firms should not be prevented from offering innovative services to the American public. In addition, some members of Congress want to reassert their authority over U.S. telecommunications policy.

The ICA and existing vendors in the affected markets have formed a group, called the "no-name coalition," to fight the legislation and counter the Bell companies' \$21 million lobbying campaign. Other members of the coalition include Adapso, Teleport Communications Group, the Independent Data Communications Manufacturers Association, MCI Communications Corp. and various information service providers.

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company. That's out-of-the-blocks even now with its heavy-duty business and industrial families of serial dot matrix and line matrix printers. CIE America also boasts an OEM Sales and Licensing Group to OEM its disk drives, printer mechanisms and a 15ppm laser printer. And to license its

C. ITOH

The third power, but only alphabetically, is Image Systems, Inc., another C. Itoh & Co., Ltd. company. Its pulse is on high-volume ion deposition printers. MegaPro, MegaServe and



Starting with C-TECH Electronics, Inc., a joint venture of C. Itoh & Co., Ltd. of Japan and printer manufacturer Tokyo Electric Company, often known as TEC. Together they're going to sell ProWriter dot matrix PC and office printers that will, quite literally, make history. Watch & see.

Then there's CIE America, Inc., a wholly owned C. Itoh & Co., Ltd.



terminal products technology. Rounding it off is the high-tech Export Group.

CIE AMERICA, INC.
Shogo Homma, President
Business Printer Group
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Leaders: Jack Sumino, Ex VP; Harry Slam, Sr. VP, Sales & Marketing; Kevin Chiu, VP Operations; Tim Sullivan, VP Engineering
OEM Sales and Licensing Group
Products: OEM: Floppy disk drives; hard disk drives; printer mechanisms; 15 ppm laser printer. Licensing: terminal products technology
Leaders: Terry Susaki, Director of Sales
Export Group
Products: Export of U.S.-made, designed and manufactured high-technology products.
Leaders: Isao Shoji, Director



MegaLine models that cruise at 30 and 45 pages per minute. Key word here is there's-nothing-else-like-it. Anywhere.

As they say, "And then there were three." And if they're anything like the one they're replacing, there's going to be a lot more famous names around. Starting now.

IMAGE SYSTEMS, INC.
Printers: 30/45-ppm MegaPro, MegaServe, MegaLine ion deposition
Leaders: Shogo Homma, President; Ron Kobayoshi, Sr. VP; Fred Collins, VP of Sales

C-TECH ELECTRONICS, INC.
Printers: ProWriter 310/315, C610, C715 dot matrix; T6 laser, 9500/9515 dot matrix (OEM)
Leaders: Shogo Homma, President; Takayoshi Iwashima, Ex. VP; Marc Liebesman, VP-Sales & Marketing



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Fujitsu adopts CCITT standard

BY ELISABETH HORWITT
CW STAFF

SAN JOSE, Calif. — Fujitsu Network Switching of America, Inc. recently became the latest major vendor to adopt a CCITT standard that is said to fulfill users' longstanding demand to interconnect different vendors' customer-premise equipment (CPE) across Integrated Services Digital Networks (ISDN).

The CCITT V.120 protocol is said to ensure interoperability between IBM Personal Computers and terminals that use different vendors' terminal adapters and servers to communicate over a 64K bit/sec. ISDN B channel.

While the U.S. ISDN industry has announced intentions to support the protocol, current supporters have been limited to a handful that includes Teleos Communications, Inc., Hayes Microcomputer Products, Inc. and Northern Telecom, Inc., Fujitsu spokesman Dean Wolf said. Fujitsu has now announced V.120 support, with new versions of its ISDN terminal adapters and telephone sets, he added.

Fujitsu has also enhanced its ISDN line to comply with the latest release of AT&T's 5E5 software for CPE that communicates with ISDN systems supported by AT&T's 5ESS central office switch.

One advantage of AT&T's latest release is that it supports a passive bus structure, enabling multiple devices to share the same B channel, Wolf said. A second advantage is a feature said to allow ISDN devices to adjust their transmission rate to match that of a receiving device that is using a lower rate, Wolf said.

The enhanced versions of Fujitsu's ISDN equipment are scheduled to ship next month. The upgrade will cost 20% to 25% of the cost of the initial product, Wolf said.

Horwitt

CONTINUED FROM PAGE 57

ment from exiting en masse when they realize that the mainframe is really going to disappear. One company lost half its IS staff, another two-thirds.

Of course, some IS departments may shrink once the LAN move is made. But companies that do not encourage their best people to stay will be losing a vital resource not only during the conversion process but afterward, when it comes time to help users adjust to and work productively in the new environment.

Obviously, you stand a better chance of keeping valuable people if you encourage them to participate in the migration, rather than making them feel like the victims of a management conspiracy. Companies that allow their IS departments to polarize into downsizing believers and nonbelievers will lose control of who stays and who goes. Regular meetings demonstrating both the benefits and the feasibility of the migration will help get people on your side.

Attitude is also important here: Don't assume that even the most senior IS people are mainframe mushrooms who would rather go job hunting than learn new PC LAN ways. You may be surprised at how many data processing people welcome the idea of getting out of the back room and working more closely with users, abandoning their Cobol and batch reports and trying out the nifty PC application development tools.

A second challenge is how to establish good relations between IS staffers and users, who are used to viewing each other as The Enemy. IS managers have grown tense and irritable from overhearing users rejoice about the new freedoms they will have in the new PC LAN regime — which IS translates as the freedom to strain the system with backbreaking queries and run roughshod through critical corporate applications.

Users, for their part, recall all the times they needed to generate a presentation for top management and IS told them "come back in three days" or simply "no can do." And they recognize IS' grim determination to get a handle on their PCs — that is, their castles — through control of the LAN.

Savvy corporations try to defuse the situation by appointing a liaison to referee disputes, translate users' requirements for IS and vice versa and in general help both groups make the LAN transition. An even more neutral facilitator could be brought in from an outside consulting firm. You may want to hire a systems integrator in any case to advise you on the technical issues of downsizing. If it's a good company, its people can become effective facilitators of ongoing talks that include IS and users, to air and resolve issues and conflicts before they fester.

Another difficulty is choosing, or balancing, between centralized vs. distributed support of users and applications. Some companies keep support in the IS department, which prevents duplication of application development efforts and ensures that all LANs get the same level of backup, maintenance and reliability. Home equity, for example, had its IS people develop a package, including application development tools and backup and maintenance utilities, that all developers are required to use.

However, centralized support of all

Gateways offer alternate vistas

BY JIM NASH
CW STAFF

Finding alternatives to blanket downsizing strategies can be difficult but not impossible. Avenues such as gateways, which link hosts to local-area networks, are proving to be cost-effective on a number of levels.

Two corporations — Oahu, Hawaii-based Pacific Resources, Inc. and Chevron Information Technology, Inc. in San Francisco — have installed Consumers Software, Inc.'s Network Courier Gateway for IBM's Professional Office System (Profs). Each sought greater connectivity using its mainframes.

Network Courier is a LAN-based electronic-mail software package that can link up to 150 users. Network Courier Gateway is software that runs on the E-mail system, connecting any server that allows for an IBM 3270 connection to the host, according to Jack Gruschow, president of Consumers Software. Courier Gateway will run in four environments: MS-DOS, Apple Computer, Inc.'s Macintosh, OS/2 and Microsoft Corp.'s Windows.

Roger Stucke, technical support manager for Pacific Resources, said Network Courier is mending the two personalities that have developed in the company's information systems department.

Pacific Resources rose in the 1800s as Hawaii's gas utility company. Over the years, Stucke said, the firm followed conventional corporate wisdom, doggedly sticking with IBM mainframes.

In the 1970s, Pacific Resources expanded into petroleum refining. The new venture, Stucke said, chose the workstation path. The company has spent the past year and a half seeking a unifying solution.

Chevron grappled with the needs of about 16,000 Profs users and fewer than

LAN installations simply does not work at giant, decentralized companies. Kodak, for example, is figuring out how to maintain decentralized LAN operations among its various autonomous divisions around the world and yet maintain some level of centralized control to ensure acceptable reliability and security levels, a spokesman said.

One thing is clear: A well-thought-out strategy is essential in order to avoid a decentralized disaster. Some companies "disperse the IS organization throughout the company, essentially decapitating senior IS executives," said Ted Klein, president of Boston Systems Group.

Another common scenario is for users to become isolated on their LAN islands, without adequate communications channels to make their needs known to an IS department that still thinks in terms of IBM and Systems Network Architecture. This can happen when a company is accustomed to viewing LANs as belonging to the departments in which they reside. Critical applications can start appearing on the LANs haphazardly, and management may not recognize the need to develop a strategy for guiding this process.

So downsizing strategists beware: In extreme cases, Klein said, "Things fall apart and users can't get anything."

Horwitt is a *Computerworld* senior editor, networking.

100 users of Digital Equipment Corp.'s All-In-1 office package, said Ken Knowles, systems analyst at Chevron. The All-In-1 users can now access Profs via Network Courier and Courier Gateway.

Both companies shopped for gateways, looking at CC:Mail, Inc.'s product, among other products. Pacific Resources liked Fischer International's EMC2 gateway but was turned off by the product's lack of third-party support when compared with Consumers Software's Courier Gateway.

Knowles reported an initial problem with Courier Gateway's ability to access its Profs directory; the software originally searched sequentially, hanging users up for almost a minute, he said. Consumers Software has since issued a revised program forcing an indexed search that, Knowles said, takes less than one second.

Search for time savings

Chevron is cooperating with Consumers Software to develop a way to automatically export Profs directories to its LANs each day using Courier Gateway. The task now requires about an hour of manual input daily.

Pacific Resources began re-examining its use of British Telecom International's Dialcom E-mail service to link users because of its cost. Roughly 50 heavy users of the service rack up monthly bills as high as \$7,000, Stucke said. The cost initially forced the firm to restrict Dialcom use to

remote-location users and central users required to communicate with those locations.

Eventually, Pacific Resources agreed to serve as a beta-test site for Network Courier 2.0 in September 1989, Stucke said.

"We brought in the LAN version of Network Courier and said, 'Oh, yeah, that's easy to use; the users are going to like this.'" he said.

"CC:Mail's Profs link was weak compared to Network Courier because instead of peer-to-peer connectivity, it actually worked through emulation," Stucke added. "It was emulating a teletype in its interface to the mainframe." CC:Mail was unable to transmit binary data, he said.

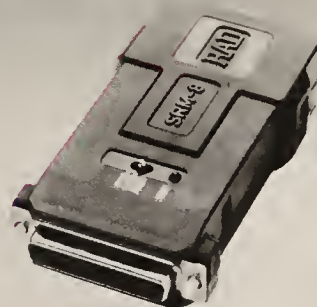
Courier Gateway, he explained, emulates another Profs node, allowing it to handle binary data transmission. Knowles said that one key factor in his decision was Courier Gateway's ability to send VM/CMS-based utilities to LANs.

"It's almost like the [IBM] 9370 we use becomes something of a server," Stucke said. Binary transmission support allows, for example, the transfer of Lotus Development Corp. documentation through the gateway to other workstations and Profs users via the mainframe.

Pacific Resources currently has about 60 Network Courier and 40 Profs users, primarily in the company's IS department and gasoline retailing arm, he explained. Those totals will increase to 350 Network Courier and 250 Profs users in the next couple of years, Stucke said.

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Computerizing the Pantry

BY SALLY CUSACK
CW STAFF

Sharon Friend works in the fast lane. As manager of the Marsh Village Pantry in Anderson, Ind., she sees about 1,000 customers pass through the convenience store each day. Friend supervises all store activities, from selling gasoline to stocking grocery shelves to running the fast-food and deli areas.

Each activity can lead to a transaction, and processing these transactions can add up to a headache. Marsh Village Pantry, a 168-store chain, is trying to make it easier to process these transactions and cut paperwork with a personal computer-based Xcellenet, Inc. system that automates data collection across a wide-area network of distributed devices.

"Before, we were doing everything via the mailman," said John Wingate, director of management information and communications systems for the company. The Pantry stores are owned by Marsh Supermarkets, Inc. in Yorktown, Ind. With the exception of one Ohio-based operation, all are located in Indiana.

The system enables the company to

communicate with the stores in an orderly fashion, Wingate said. "Each store is equipped with a PC-compatible, and the managers call up as soon as the book work is done. If that doesn't happen by 3 p.m., the network manager calls out to pick up the forms and exchange electronic mail."

The network manager portion of the Xcellenet system remotely monitors how much memory is left on each PC, how much the machine is being used, how much free disk space is available and the status of the most recent communication. It also keeps a record of the number of files sent and received and does regular checking for file transfer verification. It accesses those remote PCs via 2,400 bit/sec. modems

and telephone lines.

Xcellenet resides on an Intel Corp. 80386-based machine and a 386-based SQL Server. Both are currently tied together with Microsoft Corp.'s LAN Manager network. Marsh Supermarkets will be transferring the configuration to Novell, Inc.'s Netware in about another month, Wingate said. His department currently has a 28-node Novell network in operation for handling spreadsheet and word processing functions.



Marsh Supermarkets'
Wingate prefers PC net

Novell launches entry-level LAN

BY JIM NASH
CW STAFF

PROVO, Utah — Novell, Inc. released its latest version of Entry Level System (ELS) Netware earlier this month, seeking to answer industry observers who had questioned the LAN software manufacturer's commitment to low-end users when it introduced its Intel Corp. 80286-based product line.

ELS I Version 2.12, an 80286-based package for small businesses and independent work groups, offers smaller users the capabilities previously available on higher-end systems such as ELS II. ELS I sustains up to four concurrent users.

Ladd Timpson, product line manager for Novell's 286-based software, said Version 2.12 simplifies installation and operation of a basic LAN.

Timpson said Version 2.12 will not work with Apple Computer, Inc. Macintosh workstations. Novell claims that improvements will allow the new version to use IBM Personal System/2 Models 70, 55SX, 50Z, 286 and 30 as ELS I servers. Furthermore, the vendor said, it speeds up performance by allowing servers to run in dedicated mode. The updated version also features uninterruptible power supply monitoring.

"That is a nice, healthy announcement," said Cecilia Brancato, analyst for Oppenheimer and Co., Inc. in New York. "Everyone's been saying '386, 386, 386. When are you gonna target the lower to mid-range products?'" she said. "Now they have."

Echlin

CONTINUED FROM PAGE 57

PC had the horsepower to handle the consolidation, financial and personnel applications processed by the mainframe at headquarters. "We prototyped one of the most complicated applications, including a 100M-byte database, on the PC AT to see if it would run as fast as on the mainframe, and it did," Gold said.

Having established to his and his boss's satisfaction that the move was technically feasible, Gold performed a financial analysis that established that Echlin would save at least \$300,000 per year in hardware, software and maintenance by moving down to LANs. Armed with those numbers, he got management's full support for the migration, he said.

The actual conversion process, which involved rewriting the mainframe applications in Information Builder, Inc.'s PC Focus, took approximately three years, culminating in dispensing with the mainframe in August 1988.

The biggest hurdle to overcome during the project was the resistance of users, Gold said. Promising the users more control over their applications on the LANs did not work at Echlin, as it had at other companies, because users "already had a lot of control of their applications and worked closely with IS," Gold said.

Users reportedly worried far more than IS about the feasibility of downsizing. "When you're used to a mainframe for so many years, you have a lot of reservations about losing horsepower and flexibility on a PC," said Jon Dickey, manager of consolidation at Echlin.

Gold's department worked hard to get users involved in the project, holding weekly or semi-weekly meetings and elic-

iting user approval "for every step we took in terms of what was in their applications," Gold said.

Users nevertheless felt "we were pre-empted, no question," Dickey said. "But once the decision was made to go with the LAN, approval [given by management] and homework done to prove it can work, we would have been foolish to buck the tide."

Currently, Marsh Village Pantry cash registers tie into the PCs for downloading data and running the gas pumps, and they will eventually be tied into the Xcellenet system.

Friend had never worked on a PC before the company installed the system at her location last June. "I was a bit scared at first, but it's wonderful," she said. "All you have to do is make sure the numbers are entered correctly, and the machine does the rest."

Working together

Dickey, whose system handles all of Echlin's financial data and supports "100-odd programs," said he worked very closely with systems people during the migration "because what happens is you have to go through redevelopment of all your programs." In the end he was satisfied that the LAN environment not only worked but provided a program structure "that was identical with that of the mainframe programs," he said.

A few problems surfaced during conversion. "At one point the programmers got in on a live database thinking it was a test database," Dickey recalled. "It's a good thing we had backups. But you run across problems like that in any conversion."

LAN backup systems have occasionally fallen down on the job, Hock said. The Emerald Systems Corp. tape backup software, for example, would sometimes fail to perform a backup overnight, forcing IS to do it manually the next day. "It wasn't catastrophic," Hock said.

Echlin currently has a Novell LAN with two Motorola, Inc. 68000-based servers and two Intel Corp. 80386-based servers. "The end result is we have better performance, better applications and save a lot of money," concluded Gold, who last week left Echlin to become president of his own consulting firm, Microquest.

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CALIFORNIA Long Beach	5/8	NEW HAMPSHIRE Bedford	3/28
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Sacramento	4/4	Whippany	4/17*
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San Francisco	3/7	NEW YORK Albany	5/8
San Francisco	4/19*	Buffalo	5/15
San Jose	4/10	Melville	5/1
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Boston	5/10	VERMONT Burlington	4/5
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NEW PRODUCTS

Local-area networking software

Saber Software Corp. has announced a file management tool engineered specifically for local-area networks.

The Saber File Manager includes features such as file tagging for file group operation; Systems Application Architecture pull-down menus with full mouse support; displays sorted by name, extension, date, time or size; and support for standard DOS operations.

The product's suggested retail price is \$395.

Saber Software
P.O. Box 9088
Dallas, Texas 75209
800-338-8754

Interdata Computer Services, Inc. has announced DBZ-Rexx/Net, a Netview-to-DB2 interface that enables databases to be queried by using IBM and third-party software packages.

The device augments the sequential file service of Rexx, a command language approved for IBM's Systems Application Architecture, by adding a host command environment called Address SQL. With Address SQL, users can issue SQL que-

ries and commands.

The product costs \$18,500 and may be examined free for 21 days.

Interdata
Suite 107
2500 Maitland Center Pkwy.
Maitland, Fla. 32751
407-660-0004

Links

Network Software Associates, Inc. has unveiled Adaptmodem/2 V.32, a communications board that incorporates the properties of a full-duplex synchronous modem, an asynchronous modem and a Synchronous Data Link Control adapter into one Micro Channel Architecture-compatible plug-in device.

The product reportedly provides built-in functionality for communicating via the CCITT V.32 standard in several connectivity environments. Its AdaptSNA software supports major IBM Systems Network Architecture protocols, and an autodial/autoanswer feature supports communications of speeds up to 9.6K bit/sec.

Automodem/2 V.32 costs \$1,295, and the AdaptSNA software packages range in price from \$245 to \$785, depending on type of protocol desired. Local-area network gateway pricing starts at \$995.

Network Software
39 Argonaut
Laguna Hills, Calif. 92656
714-768-4013

Novell, Inc. has introduced a software package that allows network managers to control its remote Netware 386 servers from a centralized location.

According to the company, Netware Remote Management Facility enables customers to install, upgrade, maintain and back up distributed Netware 386 servers from remote workstations. The product's distributed server console software reportedly gives users of desktop computers the ability to execute console commands through the Netware internet facility or via asynchronous connections.

The software's price is \$1,995. It is slated to be available in the second quarter of 1990.

Novell
122 E. 1700 South
Provo, Utah 84606
801-379-5900

Network management

Fujitsu America, Inc.'s Data Communications Division has introduced Fmsview, a software product that allows alarm conditions from Fujitsu's FMS 1000 network management system to be viewed through IBM's Netview personal computer.

When user-defined thresholds are exceeded, the FMS 1000 sends an alarm to a Netview PC via Remview, a remote monitoring option of the FMS 1000. The Fmsview module in a Netview PC then converts the alarm condition into a Netview format and sends it to the mainframe operator's console, the vendor said.

Fmsview is available for a suggested list price of \$1,995.

Fujitsu America
3055 Orchard Drive
San Jose, Calif. 95134
408-432-1300

NEC America, Inc.'s Intelligent Chassis Management System (ICMS) enables users of central-site, dial-up or leased-line modems and DSU/CSUs to integrate intelligent network control and management capabilities into their data communications systems.

The ICMS includes software that runs on a NEC Powermate 286 Plus personal computer and a global monitor mode that provides operators with a health and status summary of a network. Its nondisruptive hardware health check feature allows a system or part of a system to be checked without any disruption of data flow, the vendor said.

ICMS is slated to be available next month. Suggested prices are \$3,295 for the software only and \$7,995 for a complete system with both hardware and software.

IBM Data Via AppleTalk



NetAccess™ is the gateway that connects AS/400s and System/3Xs to AppleTalk Macintoshes.

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**NEC America
Data and Video Communica-
tions Systems Division
110 Rio Robles
San Jose, Calif. 95134
408-433-1250**

A network management system for high-performance dial-up networks has been announced by Telebit Corp.

TMS 10, designed for small and medium-size networks, runs on an IBM Personal Computer XT or AT with a 20M-byte hard disk. The system provides administration and connection security via password and call-back functions. It reportedly configures, copies and verifies individual modems or clusters of local or remote modems from a central site.

TMS 10 monitors the status and usage of all network modems in real time. It also maintains a detailed record of all network events and generates reports. The product supports speeds ranging from 300 to 19.2K bit/sec.

TMS 10 is priced at \$1,995, the firm said.

**Telebit
1315 Chesapeake Terr.
Sunnyvale, Calif. 94089
408-734-4333**

Network services

Metropolitan Fiber Systems, Inc. has announced that it has begun offering fractional T1 service.

The MFSD FT-1 service allows customers to use Digital Systems Corp.'s DS0s at 56K or 64K bit/sec. clear channel speeds. The service may also be used for international or domestic compressed video, voice and subrate data multiplexing and digital facsimile transmissions, the vendor said.

The product meets all long-distance carrier FT-1 channelized network specifications. Pricing depends on the varying price structures of long-distance carriers.

**Metropolitan Fiber
Suite 1600
One Tower Road
Oak Brook Terrace, Ill.
60181
708-218-7262**

VT-720, the latest member of Retix Corp.'s family of Unix-based Open Systems Interconnect (OSI) networking products, is a packaged implementation of the VT protocol for the AT&T Unix System V environments.

By implementing the OSI Virtual Terminal Protocol, the product provides remote terminal service for Unix System V environments, according to the vendor. It also incorporates client/server functionality.

VT-720 supports four asynchronous terminal environment protocols such as NIST Telnet, NIST PAD, NIST transparent and default asynchronous mode.

Users can communicate with VT-720 via a command-line interface. It can be used in conjunction with existing terminal emulation packages.

The list price is \$395 for the common Unix-based personal computer environment. The product will be available in the second quarter of 1990.

**Retix
2644 30th St.**

**Santa Monica, Calif. 90405
213-399-2200**

Micro-to-host

Heritage Communications Systems, Inc. has announced a line of hardware and software products designed to give IBM Personal Computers, Personal System/2s and Toshiba America, Inc. laptop machines access to

IBM mainframes via Category A coaxial adapters.

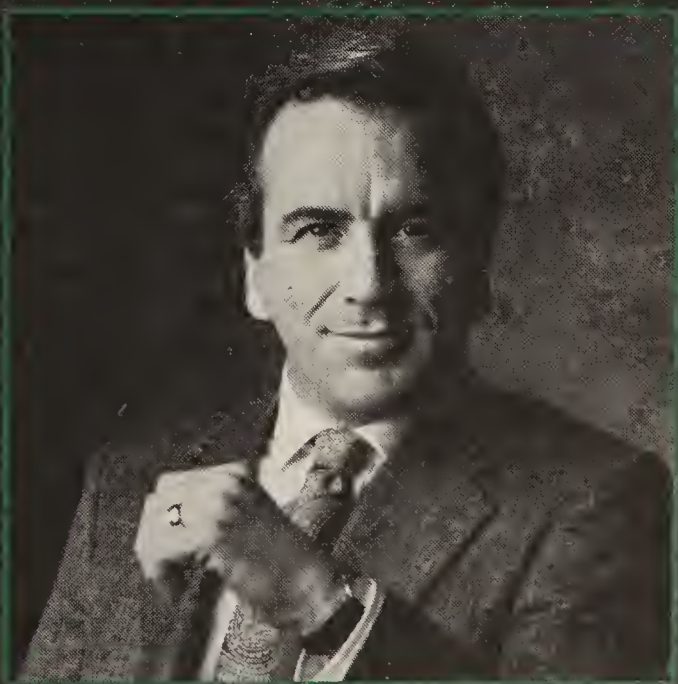
Dubbed the 3270 Platform series, the products enable end users and software developers to write customized programs for IBM 3270 applications by utilizing PCs to perform native mode 2178/79 instructions.

The Platform includes 3278/79 emulation software, the HCS78 Plus emulator and

one of three different types of cards that can be connected directly to the IBM cluster controller with a BNC connector, according to the vendor.

The Platform costs \$399.
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Rad Data Communications, Inc. has expanded its product offerings with the addition of three statistical multiplexers.

The STM-4, the STM-8 and the STM-24 are capable of multiplexing four, eight and 24 ports, respectively.

The units offer independent subchannel parameters, downline loading, password-secured access and V.54 diagnostic capabilities.

Pricing ranges from \$695 to \$1,950.

Rad Data
151 W. Passaic St.
Rochelle Park, N.J. 07662
201-587-8822

Diagnostic equipment

Support for the Digital Data Communications Message Protocol (DDCMP) has been added to Progressive Computing's Version 6.0 LM1 Protocol Analyzer software.

The DDCMP capability enables network and field service technicians to perform quality-assurance, simulation or diagnostic procedures on communications devices in the field or in a research and development laboratory.

Version 6.0 LM1 offers decoding of DDCMP link information and displays data, control and maintenance messages in a concise format.

The product is available with software

and an add-in card compatible with industry-standard 8- or 16-bit personal computer slots.

Progressive Computing
Suite 101
814 Commerce Drive
Oak Brook, Ill. 60521
312-574-3399

Gateways, bridges, routers

Consumers Software, Inc. has announced an OS/2 product designed to provide full connectivity support to its family of gateway products.

Network Courier for OS/2 enables OS/2 users to send messages on the same local-area network between Network

Courier users on DOS workstations or Apple Computer, Inc. Macintoshes. It offers Addressing, File Folders and a Custom User Directory. Its Indirect Forwarding feature allows users to send messages from remote post offices to a hub gateway LAN. Network Courier for OS/2 can support up to 150 users on the same LAN and can run on any version of OS/2.

The product is being sold as an additional user interface to the Internetwork Courier product for \$595 per LAN.

Consumers Software
73 Water St., 7th Floor
Vancouver, B.C.
Canada V6B 1A1
(604) 688-4548

Extending "thin" coaxial Ethernet segments up to 1,000 ft., the Pcnic Lanrepeater from IMC Networks Corp. regenerates Ethernet preambles, regenerates and retimes all data signals, extends collision fragments to 96 bits and provides automatic partitioning and reconnection of segments in the event of excessive collisions.

The product conforms to the IEEE 802.3 specifications for repeater performance, which allows cascading of up to three Pcnic Lanrepeaters. When used in conjunction with Pcnic Family Ethernet local-area network cards, the product provides the option of interconnecting 50-, 75- and 93-ohm coaxial cable types.

IMC Networks
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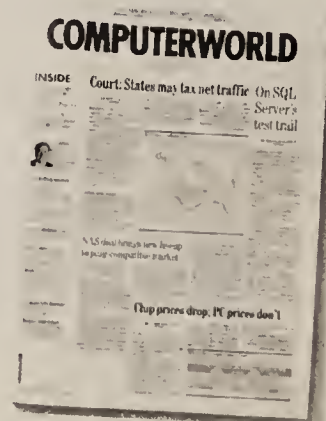
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CAD/CAM Integration's shop-floor communications server

CAD/CAM Integration, Inc. has introduced a standards-based gateway for linking shop-floor equipment, such as computer numerical control machine tools, directly to businesswide systems, including manufacturing resource planning, CAD/CAM and production-control applications supported on almost any hardware platform.

Network Communication Server supports the Unix operating system and can run multiple software packages including data collection and production monitoring. It supports Microsoft Corp.'s X Windows, Sun Microsystems, Inc.'s Network File System, the Open Software Foundation's OSF/Motif, Posix (IEEE standard 1003.3) and Federal Information Processing Standard in a Unix environment.

The gateway sells for \$6,350.

CAD/CAM Integration
128 Technology Drive
Waltham, Mass. 02154
617-891-1069

EXECUTIVE TRACK



Clement Stein III, former director of data processing at the **International Academy of Merchandising & Design Ltd.** in Chicago, has been appointed the academy's director of marketing.

The academy offers degree programs in fashion design and merchandising and interior design on campuses in Chicago, Tampa, Toronto and Montreal. Stein's previous responsibilities included information systems at the Chicago and Tampa campuses as well as development of the academy's computer-aided design laboratory in Chicago.

Stein holds a bachelor's degree in computer science from DeVry Institute of Technology and studied at DePaul University, both in Chicago. He also attended the Management Institute program for school directors.

Pamela Huelster has been promoted to director of business systems development at **Tupperware International** in Orlando, Fla. She is responsible for the development and implementation of Tupperware's systems worldwide.

Huelster was most recently director of MIS at Tupperware Pacific in Hong Kong. Before joining Tupperware in 1986, she was a management consultant. She also worked in IS at Westinghouse Corp. and Martin Marietta Corp.

Huelster holds a bachelor's degree in computer science, an MBA and a certificate in data processing.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

City-building with a trim IS

Rouse reins in expenses by keeping organization well-run and out of the way

BY CLINTON WILDER
CW STAFF

Not everyone has heard of The Rouse Co. However, almost everyone living in a U.S. city in the 1980s has felt its effect on the quality of urban life.

Rouse is the developer and operator of such noted projects as Boston's Faneuil Hall Marketplace, Baltimore's Harborplace, Miami's Bayside and, most recently, Phoenix's Arizona Center. Although information technology is not readily apparent among the trendy boutiques, fancy finger foods and balloon stands, it plays an increasing role in managing a business as diverse as Rouse's.

It is also not apparent that Rouse's wood-paneled, atriumlike corporate headquarters on a Columbia, Md., lakefront contains almost all raised flooring. Michael Jecko, vice-president and director of the information systems department at Rouse, doesn't mind the low profile. He prides himself on a well-run and responsive IS organization that doesn't get in the way.

"Our business has become much more information-intensive, and we've satisfied that need with aggressive applications development in the 1980s and the rapid but controlled increase in the use of PCs," Jecko says.

Rouse management, dissatisfied with the company's IS operations in the early 1980s, hired Booz, Allen & Hamilton, Inc. in 1982 to help draft a long-range systems plan. That was followed by a Booz office automation and telecommunications study in 1983, with both resulting in reorganization and increased staffing.

Since 1986, however, the IS staff at the \$500 million company has held



Katherine Lambert

Rouse's Jecko creates urban oases with its lean, mean IS machine

fairly steady at about 40 people. Jecko's watchword has been to do more with less, and he has held average annual IS budget increases to about 5% — even though demand for CPU resources at Rouse grows 15% to 20% per year. The current IS budget is about \$5 million per year.

Rouse's financial success depends on the vagaries of some of the most volatile factors in the U.S. economy: real estate market swings, retail industry trends and regional economic cy-

cles. Its retail center tenants range from giants Sears Roebuck and Co. and J.C. Penney Co. to one-man pushcarts selling handmade goods for cash only. The key for IS is to be flexible and hold the line on expenses.

"Everything goes in cycles," Jecko says. "Our corporate philosophy is to be very lean and highly competent."

Rouse has held steady with 11 in-house applications programmers, with contract programmers ranging from

Continued on page 77

EIS: Too much stuffing, and it's a turkey

BY ALAN J. RYAN
CW STAFF

In the case of executive information systems (EIS), less is definitely more, according to Lawrence Runge.

Runge, project manager of Fleet Services Development at General Electric Capital Corp. in Stamford, Conn., said that when a firm is building an EIS, the easiest trap to fall into is throwing just about everything into it in the hope that the senior executives will find some use for it.

Instead, he said, the users become mired in too much information and may find the system too intimidating to use.

Speaking at Infoline's EIS conference in New York recently, Runge said that too often, the information systems department will try to approach an EIS project as it would tackle traditional IS projects. The traditional approach involves providing as much information as possible. Instead, Runge and other speakers advised, the EIS should be simple to use and contain only highly critical information.

"Underpromise and overdeliver," said Richard McGeary, chief financial officer for information systems at Connecticut Mutual Life Insurance Co. in Hartford, Conn.

A first step to EIS implementation is

the executive interview process, in which executives work together to list the critical success factors of the company. From that list, the needs of the EIS can be decided. Still, building an EIS is a continuous cycle that never ends, Runge warned.

The EIS that Runge helped to build at GE Capital began as working prototypes that are continually improved and tweaked to meet the changing needs of the executives they are serving. Eventually, he said, the prototypes simply become the system.

"We found our requirement specifications were impractical," he said. "But prototyping helped us to drive out the requirements. It also helped because the executives wanted immediate results and didn't have any patience for multiyear processes."



David Flaherty

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TAKING
CHARGE

Aaron Goldberg

Help wanted?
Not necessarily

When a major industrial company needed to develop a new application that used state-of-the-art software tools, it did what many prudent information systems management teams do. The IS department developed a contract with a firm that had expertise in designing graphical user interface-based IBM DB2 applications. Three weeks after the department made this decision, six of its best development people left.

Cause and effect? Absolutely.

Although the company's IS managers maintain to this day that there is no relationship, I believe they have missed one of the more sinister effects of applications development contracting that occurs today. While many dwell on the costs, deliverables and expectations for the organization when tasks or operations are sent outside, the effect on staff is neglected.

Technical competence and the chance to use new tools or products is a large part of the satisfaction technical professionals receive from their job. This issue has been exacerbated by the amount of press, marketing and general hype that these people are reading on a weekly basis. At one Fortune 500 company that I've worked with, the IMS Cobol programmers line up for training in everything from C to Metaphor Data Interpretation System to OS/2 LAN Manager.

Any decent IS professional wants to advance. Now, consider the message that you send to these people when the new application to be developed with all of these advanced tools is done on contract. It's not just a slap in their face; it's a true vote of "no confidence" in their abilities. You'd have a hard time convincing me that I was a key individual in the IS department if you brought in the gun-slingers any time there was something new or a little difficult to do.

By now, the arguments as to why the

external teams are needed flood into your head: "We don't have the time," "We're resource-bound," "Hiring additional staff is far more expensive in the budget than contractors" and my personal favorite, "They'll do exactly what we want done." It's not that any of these points aren't valid, but has a consideration to your own staff been made? If so, how has it been presented?

In one case, an aerospace firm's IS managers contracted for some Microsoft Windows development work. They didn't even ask their own people. It turned out that one of their junior people had interned at Microsoft in college in the Windows group and could have done the job better than what was paid for.

At the heart of this issue is not a staff

MANAGING BY a contract is certainly easier than managing people, but the long-term benefits can be far fewer.

that can't do what you want, but a management problem. Nearly every excuse that comes up has to do with poor management skills on the boss' part rather than fundamental failings of the staff.

Managing by a contract is easier than managing people, but the long-term benefits can be far fewer. Don't expect to build the kind of organization with low turnover, high morale and great service that you really want if contracting is the primary method of getting things done.

I'm not saying that one should always look inside for development capability and ignore external sources that have specific skills. However, trying to build the capabilities and promote the careers of your people should take precedence. After all, "Help Wanted" ads should not be an increasing budget line.

Goldberg is vice-president of desktop computing at International Data Corp., a market research and consulting firm in Framingham, Mass.

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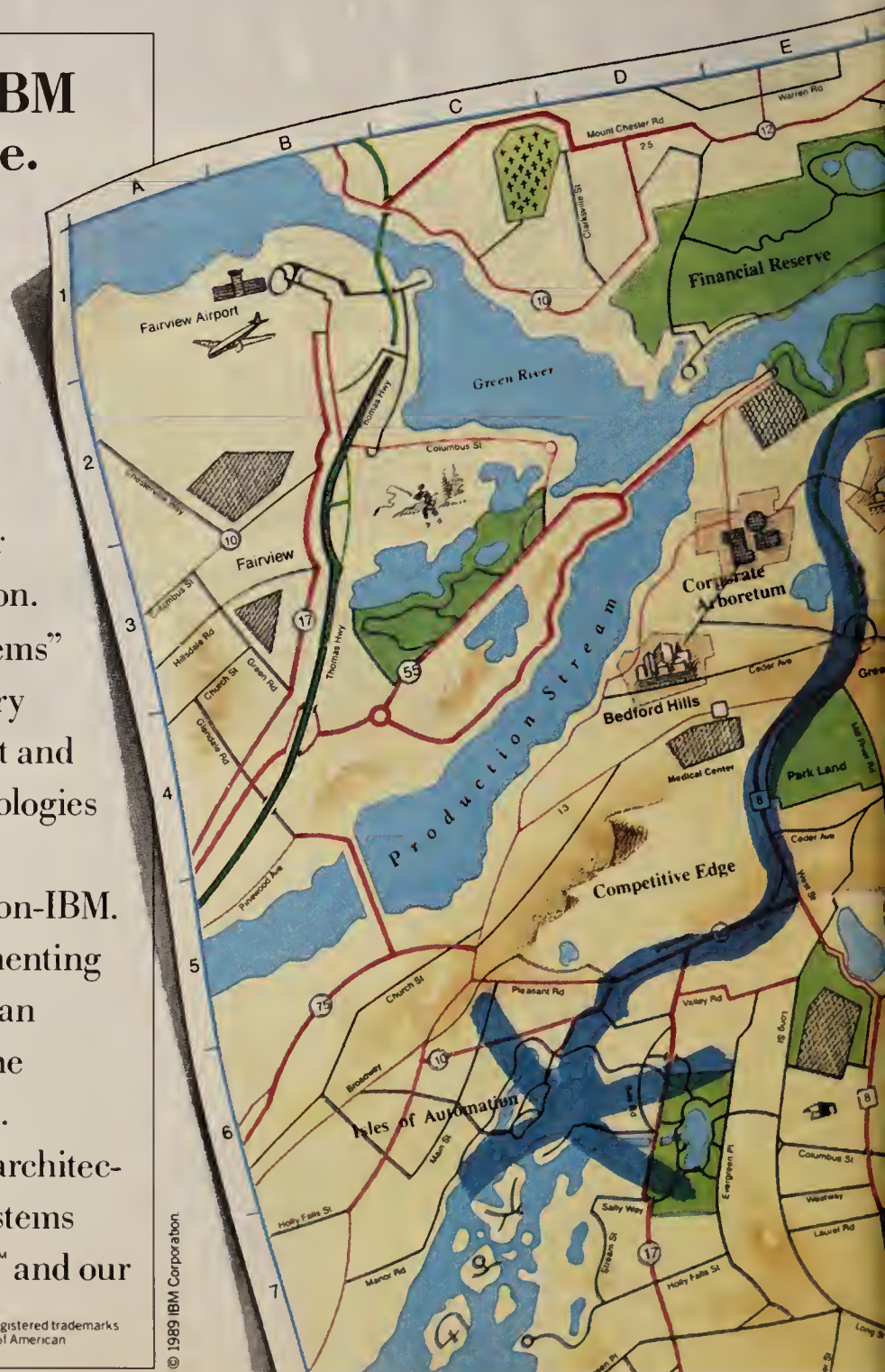
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Networld seeks
LAN abstracts

Abstracts on local-area networking topics are being sought for Networld '90, to be held Sept. 10-13 in Dallas. The conference will address the major issues of LAN management and technical topics: wide-area networks; operating systems and software development; LAN applications; network standards and strategic directions; connectivity and network planning; and design.

Abstracts, which must be received by April 2, will be evaluated by a moderator. For more information, contact Kathy Ryan, Networld, 385 Sylvan Ave., Englewood Cliffs, N.J. 07632, or call (201) 569-8542.

BOOK REVIEW

Book smart, but not savvy, when it comes to CEO success

TOUGH CHOICES

By Warren J. Pelton, Sonja Sackmann and Robert Boguslaw
Dow Jones-Irwin, \$24.95

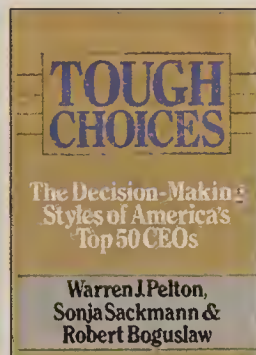
In charting the success of major corporations, one is invariably drawn to an analysis of the top bananas who made success a reality. It was as much the marketing ge-

nus of Thomas Watson Jr. that made IBM what it is today as it was the quality of Big Blue's products. Similarly, it was Chairman Donald Petersen's boldness and acuity that lifted Ford Motor Co. from the brink of oblivion and back to world-class status.

In truth, the individual is eminently more fascinating than the corporation could ever be.

The 1980s brought an onslaught of business pop-culture authors who ostensibly had probed the innermost workings of the corporate intellect. Beyond creating new talk show personalities and making said personalities a lot of mon-

ey, few of these books had much practical help to offer corporate managers, and *Tough Choices: The Decision-Making Styles of America's Top 50 CEOs* is no different.



The shortcoming with so many of the Tom Peters, John Naisbitt, Harvey Mackay-type books is the same one that plagues the celibate counselor who is trying to help the couple with a sex problem: They just never got close enough to the action to really know what was going on. Peters' tome *Thriving on*

Chaos was a classic example of this basic failing.

So at last, fresh in print in the new de-

cade, along comes a book that seeks to tell it like it is, direct from the horses' mouths. Based on interviews with "America's top 50 CEOs," *Tough Choices* — by consultant/academics Warren J. Pelton, Sonja Sackmann and Robert Boguslaw — promises to serve as a "guidebook to carry you through the uncharted waters of chaotic solutions, at any level of management." But, as the old saying goes, you can't believe everything you read.

Simply put, *Tough Choices* fails, not for what it does but more for what it doesn't do — and certainly should have done — given the opportunity its troika of authors had.

Squandered was the chance to find out the specifics of why the top 50 chief executive officers made the choices they did. With the characteristic dryness of a master's dissertation, the authors jump erratically from CEO to CEO, offering the reader very little insight into what prompted the chiefs to make the decisions they made. One emerges with little more direction than chapters titled "Focusing on the long term," "Acknowledging the big picture," and "Employing a team of good people." The only lesson missing is "Do unto others as you would have them do unto you."

For example, we are told that Frank Cary, former CEO of IBM, made the tough choice of establishing a unit to develop the IBM Personal Computer, a unit largely independent of the corporate bureaucracy that had stymied numerous development efforts. We learn what Cary did. We know it succeeded beyond IBM's wildest dreams. However, we don't know why IBM later blew away the unit's independence, or why it never replicated the success for the development of other product lines.

Canned solutions?

Where *Tough Choices* does succeed is in drawing a sharp distinction between what it calls Type 1 situations — those that have predictable, Harvard Business School-type bottled solutions — and Type 2. The latter refers to those business dilemmas which, due to rapid social, political and technological change, cannot be treated with standard solutions. The problem is, given the reality of today's world, it's hard to imagine key business problems that aren't of the Type 2 ilk.

Tough Choices also does a good job of surfacing the one quality that truly does tie together all the CEOs interviewed, and that is stylistic flexibility. In all the decisions and situations reviewed, the executives never allowed themselves to stick to any one point of view or policy to a fault. Instead, they are seen frequently changing course, changing management teams, changing gross strategies or all of these until their instincts (and the board of directors) indicate that they are on the right track.

Ultimately, though, the biggest problem facing this and other management how-to cookbooks is best given by the authors themselves: "Business judgment is knowing where an acceptable arrangement can be made and how an acceptable arrangement can be structured that will represent the right amount of risk and the right amount of return. It's nothing that you can learn from a book."

Amen.

BILL LABERIS

Laberis is *Computerworld's* editor in chief.

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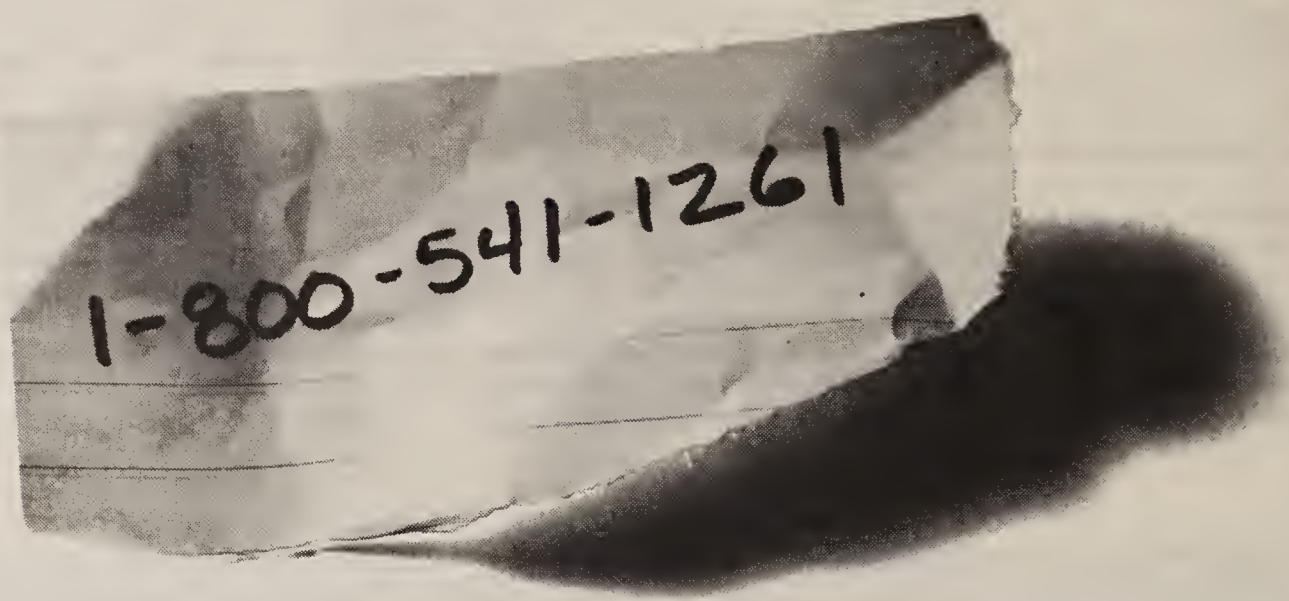
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Frito-Lay dips into flexibility

Designs database for centralized control, decentralized decision-making

BY CLINTON WILDER
CW STAFF

For companies trying to grapple with the transition from "big and slow" to "lean and mean," Frito-Lay, Inc. suggests a better alternative: big and mean. The key to that, according to Vice-President of Management Services Charles S. Feld, is a flexible information structure.

Frito-Lay found that it needed *decentralized* decision-making to respond to a rapidly changing market, but *centralized* controls to hold down expenses and leverage economies of scale. That meant designing the supporting relational database to be

more flexible than the Frito-Lay organization itself, Feld told attendees at the annual Nolan, Norton & Co. symposium held in Tarp Springs, Fla., earlier this month.

"In this environment, you can't be run on paper," he said. "You must have the kind of environment that allows the network to do the work. We had to disconnect the transaction base from the organizational form."

The centerpiece of that transaction base is known in Feld's unit as The Cube — IBM's DB2 database configured to track snack food sales by a variety of

parameters. Within the U.S., the database tracks Frito-Lay's 32 geographic regions, four retail distribution channels and six to eight product categories — giving The Cube several hundred different "cells."

Each cell contains sales data, forecasts, trends and competitive information within its organizational parameters. For example, a cell may include sales of potato chip products through convenience stores in Chicago, or of tortilla chip lines sold in supermarkets in Atlanta. The sales plan for each cell is revised every 16 weeks.



Rouse

FROM PAGE 71

two to eight at any given time. When an IS employee leaves, Rouse requires a written justification for filling the position. Jecko requires the same for any PC purchase exceeding \$500.

One way to keep development staff expenses down — and make users happy — is to let users play a big part in the applications process. "We do not design applications without a design group that includes the users," says Winston Smith, director of division systems for the Operating Properties Division, which uses about 50% of Rouse's IS resources.

"Mike Jecko's group provides the programming expertise, but a user group always does the designing," Smith says. "We've always operated that way and because of that, we have very little resistance to change here."

The Operating Properties Division manages Rouse's approximately 70 retail centers in the U.S. and Canada, relying on a nationwide network linked to the corporate IBM 3090 Model 150 in Columbia via a 3275 communications controller. Artificial Intelligence Corp.'s Intellect software provides ad hoc query capability to Rouse's Computer Associates International, Inc. IDMS/R database, allowing managers to analyze information that may include the following:

- Sales performance trends and comparisons, either by type of merchandise, name of retail store or region.
- The impact of external events on sales in particular regions, such as the devaluation of the Mexican peso in the Southwest or a prolonged cold spell in the Northeast or Midwest.
- Customers' seasonal buying trends. "We're similar to the U.S. Commerce Department in that respect," Smith says.

During the current retail industry shakeout, the timely availability of information when a chain declares bankruptcy is critical to Rouse. Although Rouse has only a few Campeau Corp. stores as tenants, the bankruptcy threat has thrust IS capability to the fore.

"If John Doe Stores declares bankruptcy and we have one [of their stores] in 35 centers, we have to know quickly where those stores are," Smith says.

Better, faster decisions are also enabled by information technology in the Research and Site Strategy Division, which analyzes new development sites for sales potential. A Rouse-developed application, running on an NBI Corp. local-area network supporting 10 personal computers, produces a potential sales model based on geographic and demographic data for a particular location.

Variables range from regional economic growth forecasts to the distance that a consumer at a given income level is willing to drive for various shopping attractions.

"When we did this by hand, running different scenarios was a major time investment," says James Yeiser, assistant director of research and operating properties for the division. "As a result, we made site decisions without running all the scenarios that we wanted. The computer model significantly increases the quality of the answer and our confidence in the answer."

User department IS autonomy is important to Yeiser, who refers to the NBI network as "our little mainframe." "For me, the perfect system is the one that disappears," he says. "Everything I need from MIS is there, and I'm no longer aware that there's a central system. That's a huge accomplishment."

Providing that kind of service to Rouse's knowledge workers is satisfying for Jecko, who former-

ly worked in the very different atmosphere of a large regulated utility. Before joining Rouse in 1982, Jecko was director of computer and general services at Potomac Electric Power Co. in Washington, D.C., and managed an IS staff four times the size of Rouse's.

"I really like this more because you have your arms around the whole thing," he says. "And the Rouse product is a fun and festive product, and that really permeates the organization."

MANAGEMENT BRIEFS

EDS agrees to manage SBA's data processing

The U.S. Small Business Administration (SBA) has signed a seven-year, \$45 million contract for **Electronic Data Systems Corp.** to handle its data processing. An EDS data center in Fairfax, Va., will replace the SBA's existing center at its Washington, D.C., headquarters. Supporting 1,700 SBA terminals nationwide, EDS will process SBA loans, minority business designation applications and congressional inquiries.

Salvatore Simeone, president of Software Engineering of America, Inc., has been named to the 1990 Chairmen's Committee for the second annual **Computerworld Smithsonian Awards**. Simeone will join the panel of 51 other information technology chairmen organized by **Computerworld** and the Smithsonian Institution's Museum of American History.

The **Computerworld Smithsonian Awards** are the only awards honoring the visionary use of information technology and were created to spotlight he-

"Within each cell, we plan our business as if we're a small business," Feld said. "In the past, we could have an annual plan to sell \$1 billion worth of Doritos and tell our sales force to go work it out. Now we have to be short-term and flexible, and the system must respond. We can't have a national sales meeting every 16 weeks."

Less salt in the Southwest

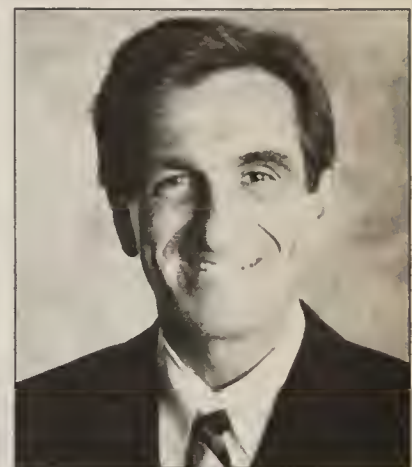
That flexibility may mean distributing specialized products to suit regional tastes, such as crispier Cape Cod-style potato chips in New England or less salty restaurant-style tortilla chips in the Southwest. Or, pushing more low-calorie foods in stores that sell more diet sodas. Or, doing regional promotions, such as printing the 49ers logo on bags sold in San Francisco and the Browns logo on bags sold in Cleveland.

"In the past, we had national pricing and national promotions for Memorial Day and Labor Day weekends, and that was about it," according to Feld. "The business cycle was well-ordered and long."

However, that was before the proliferation of convenience stores, gas station minimarts as well as hundreds of smaller munchie makers springing up on the competitive horizon. Frito-Lay found it could sell enough products through micro-marketing techniques, but that it was expensive. It needed to find a way

to leverage its \$3.5 billion size to trim costs — so The Cube was developed.

"It used to be that staff at the every level would go around to different databases, crunch numbers and chart them," Feld said. "There was a coordination gap,



Frito-Lay's Feld: *We have to be short-term and flexible*

resulting in not enough or too much product out in the channels and late deliveries."

Now, 40 of Frito-Lay's senior executives have access to "slicing" The Cube in different ways to analyze sales trends and competitive factors. While the individual cells stay responsive on the micro-market level, the numbers can be combined for the macro overview by region, product and/or channel.

"The people at the local level know what's happening, and the centralized executives can look at that data and know what it means," Feld said.

business affairs, Kansas City Regional Council of Higher Education, Leawood, Kan.

Janet L. Mushrush, branch manager, Comtech Systems, Cincinnati.

John P. Robinson, EDP manager, WMCO, Inc., Cincinnati.

Janell S. Vickers, manager of special projects, Owens-Corning Fiberglas Corp., Toledo, Ohio.

Val J. Young, programmer analyst, Washoe County, Reno, Nev.

Robert L. Buhlis, systems analyst, The Permanente Medical Group, Oakland, Calif.

Melvin F. Culp, director of information resources, Utility Power Corp., Bradenton, Fla.

Kenneth W. Hasledalen, deputy commissioner, State of Minnesota, St. Paul, Minn.

Thurman R. Lollar, vice-president of IS, Gold Kist, Inc., Atlanta.

William N. Murton II, manager of profitability analysis, Chilli-cothe Telephone Co., Chilli-cothe, Ohio.

Ann M. Purr, manager of systems and information processing, Life Office Management Association, Atlanta.

Ronald K. Tober, director of MIS, American Brass Co., Buffalo, N.Y.

Michael D. Wobig, director of group claims, Ameritas Life Insurance Corp., Lincoln, Neb.

CALENDAR

Corporations are constantly evaluating and re-evaluating the way they create and use information systems. But ordinary approaches accomplished through existing organizational designs often do not match the requirements of internal and external customers.

To address this issue, an Executive Issues Forum for IS and operations managers called "The Power of the Partnership" will be held May 6-9 in Atlanta. The conference, sponsored by the Association for Systems Management (ASM), will offer more than 25 educational sessions on IS technology and management topics. Keynote speakers include John P. Imlay, chairman and chief executive officer of Dun

& Bradstreet Software Services, Inc.; James C. Wetherbe, director of the MIS Research Center; and Michael Hammer, president of Hammer and Co.

For more information, contact Terri Gibbons at the ASM, 216-243-6900.

APRIL 1-7

Conference on Human Factors and

Computing Systems. Seattle, April 1-5 — Contact: Toni MacHaffie, CHI '90, Beaverton, Ore. (503) 591-1981.

Distributed Network Computing and Object Environments. Cambridge, Mass., April 2-4 — Contact: Patricia Seybold Office Computing Group, Boston, Mass. (617) 742-5200.

1990 Conference of Information Management. New York, April 4-5 — Contact: The Conference Board, New York, N.Y. (212) 339-0290.

EIS '90. San Francisco, April 4-6 — Contact: EIS Institute, Newton, Mass. (617) 964-4555.

Financial Executives Institute Information Management Conference. Chicago, April 5-6 — Contact: FEI, Morristown, N.J. (201) 898-4629.

APRIL 8-14

Voice, Data and Video Networks. Las Vegas, April 8-11 — Contact: College and University Telecommunications Administrators Association, Lexington, Ky. (606) 252-2882.

Strategic Data and Systems Planning. Washington, D.C., April 9-11 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

USENIX C++ Conference. San Francisco, April 9-11 — Contact: USENIX Conference Office, El Toro, Calif. (714) 588-8649.

Association for Information and Image Management Show. Chicago, April 9-12 — Contact: AIIM, Silver Spring, Md. (301) 587-8202.

Rocky Mountain Telecommunications Exposition. Denver, April 10-11 — Contact: Tele-Communications Association, Denver, Colo. (303) 292-5537.

Network Management Solutions '90. Anaheim, Calif., April 10-12 — Contact: Dorothy Ferriter, International Data Corp., Framingham, Mass. (800) 225-4698.

Mocworld Exposition. San Francisco, April 11-13 — Contact: Mitch Hall Associates, Dedham, Mass. (617) 361-8000.

APRIL 15-21

Southwest High-Tech Career Fair. Kansas City, Mo., April 16-17 — Contact: Chery Elston, Dallas, Texas (214) 462-8807.

Supercomm '90 Conference and Exhibition. Atlanta, April 16-19 — Contact: United States Telephone Association, Washington, D.C. (202) 835-3100.

Financial Management for Data Processing Annual Conference. San Francisco, April 18-20 — Contact: Financial Management for Data Processing, San Francisco, Calif. (415) 731-3706.

APRIL 22-28

Academic Microcomputing Conference. Columbus, Ohio, April 22-25 — Contact: John Schar, Ohio State University, Columbus, Ohio (614) 292-4843.

CASE Strategic Planning Forum. Dallas, April 22-25 — Contact: Evolving Technologies Corp., East Walpole, Mass. (617) 696-0427.

Fiber Optics to the Year 2000. Monterey, Calif., April 23-25 — Contact: Electronic East Corp., San Mateo, Calif. (415) 572-1800.

International Technical Project Management Conference. Boston, April 23-25 — Contact: William A. Hurwitz, Center for Project Management, Tyngsboro, Mass. (508) 649-9731.

IEEE Seminar on International Telecommunications. New York, April 24 — Contact: Bert Lindberg, IEEE, New York, N.Y. (212) 825-1527.

Speech Tech '90. New York, April 24-26 — Contact: Media Dimensions, Inc., New York, N.Y. (212) 533-7481.

National Conference on Systems Integration. Washington, D.C., April 24-27 — Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400.

International Conference on Information Systems Quality Assurance. Orlando, Fla., April 25-27 — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

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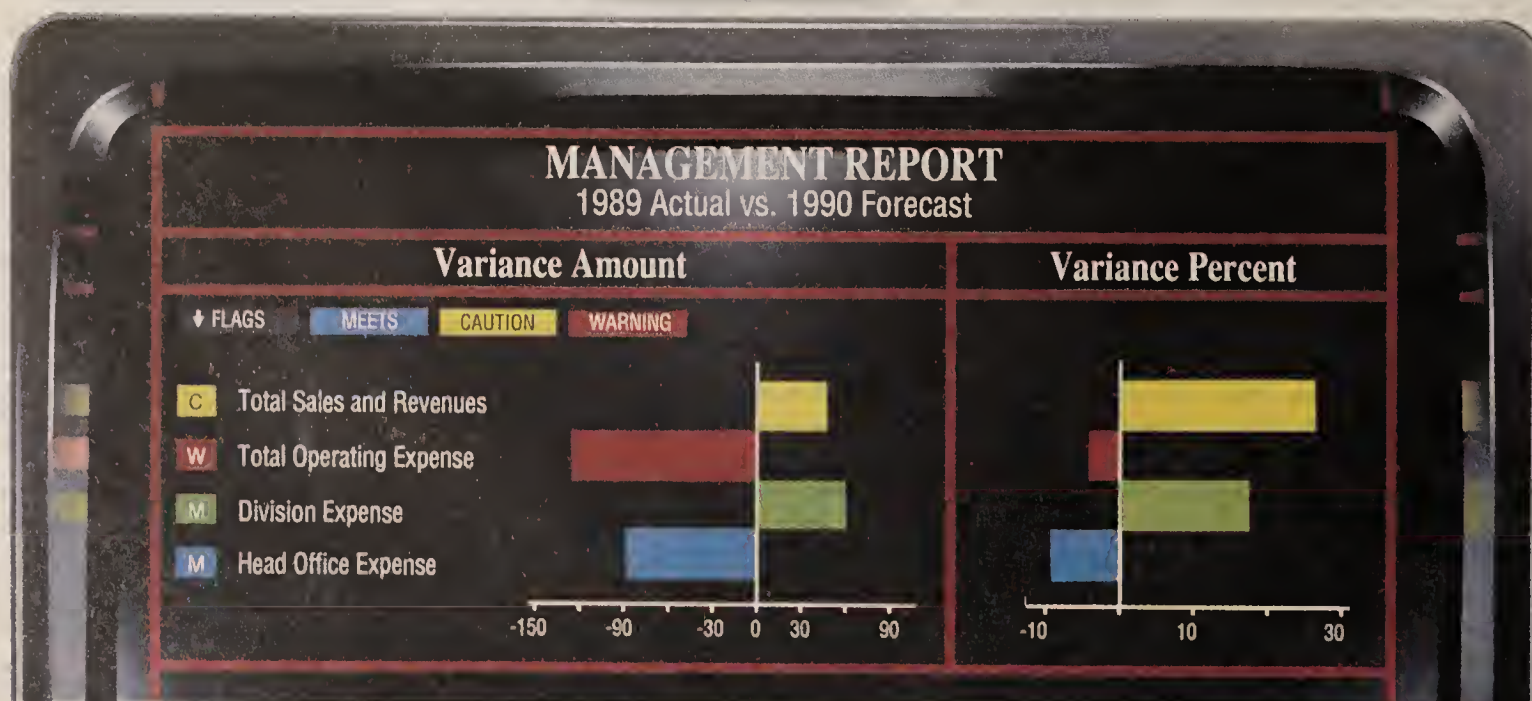
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* "Decision Support and Executive Information Systems: Markets and Trends," International Data Corporation, November 1988.



EXECUTIVE REPORT

VIEW FROM THE FRONT LINES

IS wins acceptance in the trenches

BY DAVID LUDLUM

Department heads in the customer-contact group at Brooklyn Union Gas Co. have not always had great relations with their information systems organization. True, IS often responded quickly to requests, but it didn't always respond according to the managers' priorities.

The problem was that these department managers were shooting from the hip, says John Nocero, the gas company's vice-president for customer contact. About a year ago, however, the managers chose one person to prioritize their needs and convey those priorities to the IS people. The move cleared up a lot of confusion, and the group now has a "damn good" relationship with IS, Nocero says. "Working together," he adds, "is the whole name of the game."

Based on responses to an exclusive *Computerworld* survey conducted over the past two months, it is a game that is catching on surprisingly well in corporate America.

The survey, which probed the feelings of more than 500 department managers on relations with IS groups, produced a portrait of the IS/user relationship that departs sharply from conventional notions of embattled IS organizations and embittered users.

When asked to pick words that characterize their relations with IS, for example, the managers overwhelmingly chose positive terms such as "cooperative" (57%) and "constructive" (52%).

Less than one-fifth of the managers picked such negative expressions as "distant" or "strained," and far fewer selected harsher terms — only 6% chose "adversarial" and 2% opted for "antagonistic."

Susan Feinberg, director of marketing development at K Mart Corp., reflects this positive



Brooklyn Union Gas' Nocero says relations improve when users speak with one voice

outlook; she says that she has never had problems in dealing with the IS group. "And it gets better as we understand each others' needs," she adds.

The survey asked managers about the general state of their relationship with IS. It also delved into specific issues such as whether IS departments exert too much control over information and whether they demonstrate an adequate understanding of user requirements. Both of those issues cut to the very heart of user/IS relations and have been major points of contention in the past. Based on the answers of these managers,

however, there has been substantial progress in smoothing out the differences.

In each case, the majority of managers indicated satisfaction with the policies and practices of their IS departments. A more pressing concern for most department managers these days is extending their involvement with long-term IS planning.

Slightly more than half of the managers say relations with their IS organizations have improved over the past two years. When that progress has unfolded, the leading cause has been better communication with the IS organization. The picture is

not entirely cheery for IS managers, however. A close second in reasons for improved relations is a change in management.

The fact that installing a new IS chief can improve relations between IS and users does not always mean the previous regime was doing a bad job. Sometimes the arrival of a new IS chief coincides with an elevation of the position.

Allstate Insurance Co. has improved relations between IS people and users by bringing in a new top IS manager, according to John Gragnola, the company's vice-president of research and planning, who is based at a research facility in Menlo Park, Calif.

Last year, Allstate hired Bill Sitter from Northwest Airlines, giving him the posts of senior vice-president and chief information officer along with a spot on Allstate's board of directors.

Sitter has more authority than his predecessor, Gragnola says, and he is using it to develop a corporate plan for tying systems together. The aim is to allow business units to communicate better with the goal of improving customer service.

Rockwell International in El Segundo, Calif., is another company in which management changes have improved relations between users and IS. However, the company would rather improve communication with the

INSIDE

IS learns business lessons firsthand

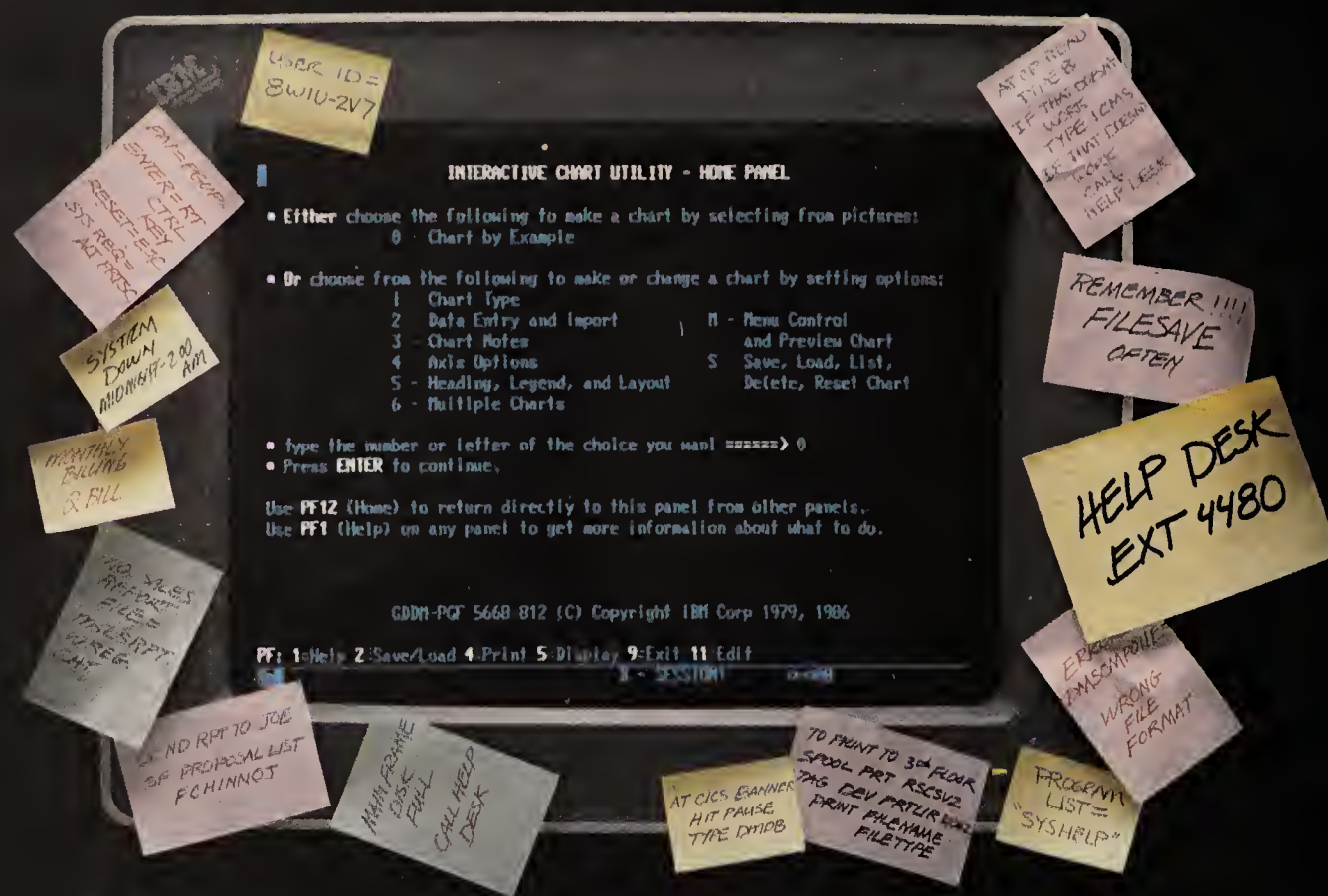
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Measure your own users' satisfaction

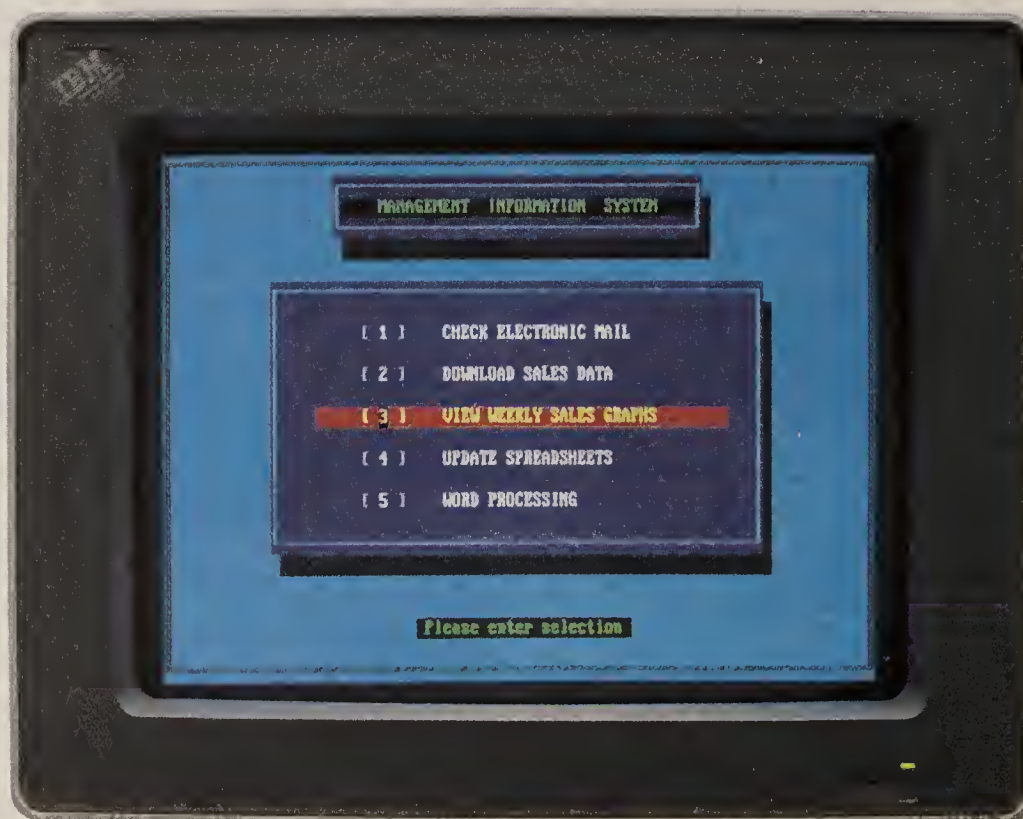
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CW commissioned IDG Research Services Group to survey user department managers at large U.S. firms. The managers, most of whom are vice-presidents or higher, reflect a cross-section of five functional areas: accounting/finance, marketing/sales, administration/human resources, engineering/R&D and manufacturing/operations. Their names came from America's Big Business Executives List and the Expanded Fortune Executive Database. Of 2,500 names selected randomly, CW tallied 516 responses.

Ludlum is a *Computerworld* senior writer.



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Does IS pass muster?

"The IS department does a good job of communicating with us."

Percent of respondents
(Base of 508)

Agree
56%

Don't know
11%

Disagree
33%

"The IS department understands the needs of my department."

Percent of respondents
(Base of 509)

Agree
55%

Don't know
12%

Disagree
33%

"The IS department responds effectively to user needs."

Percent of respondents
(Base of 512)

Agree
68%

Don't know
8%

Disagree
24%

"The IS department has too much control over corporate information."

Disagree
58%

Don't know
17%

Agree
25%

Percent of respondents
(Base of 511)

"My department has enough involvement in long-term IS planning."

Percent of respondents
(Base of 511)

Agree
38%

Don't know
12%

Disagree
50%

"My department has enough control over its expenditures on IS."

Percent of respondents
(Base of 510)

Agree
47%

Don't know
14%

Disagree
39%

"IS should take more initiative in developing systems for my department."

Percent of respondents
(Base of 509)

Agree
40%

Don't know
13%

Disagree
47%

Acceptance

FROM PREVIOUS PAGE

IS people already on board, says Richard Bohlen, the company's senior vice-president of operations.

Rockwell is elevating the role of IS management and tying it more closely to business operations. Thus, its top IS managers report two or three levels higher than in the past — often to a business-unit general manager.

"In some cases, it requires replacing the IS director with someone with a broader [range] and better communication skills," Bohlen says.

"Preferably, we'd like someone who has had a variety of job experiences, not just IS."

However, the company views the situation primarily as "an educational challenge," he adds. IS managers should maintain a strong technical background while acquiring a greater understanding of Rockwell's manufacturing process, how the company evaluates product quality and how it measures success in financial terms, Bohlen says.

Some changes in IS management are anticipated, given the big things business managers expect from information systems.

More than 80% of the surveyed managers say information systems are key to competitive advantage, and three-fourths of them say their need for IS services will increase.

"There's no way in hell we could provide our customers the level of service we're providing today without" IS, Norcero says. "It couldn't be done even if we tripled our labor force."

At Capital Holding Corp., an insurance company in Valley

Forge, Pa., IS is regarded as a critical component in an effort to improve customer service.

The company's direct-response group is trying to deliver more personalized attention to customers by providing them with one point of contact for various policies. To do so, it is creating work teams that cross departmental lines, which calls for information systems that do the same thing.

"The customer was demanding more customized treatment, and we were finding systems were in our way," says Norman Phelps, president of the group.

To develop better service, which might take three to five years, IS people need to learn more about customers, Phelps says. The way to do so is to meet the customers and learn about their needs first-hand, so the company holds sessions that bring IS people and customers together.

At Rockwell International, business managers are encouraging IS people to be more aggressive in coming up with ideas for reaching business goals, Bohlen says. One step has been to include IS directors on divisional strategic planning teams.

In terms of the importance that they attach to information systems, departmental managers have something in common with top executives, more than 100 of whom responded to a similar CW survey a year ago. More than four-fifths of the chief executive officers said information systems represent the key to competitive advantage and nearly nine out of 10 expected that systems would significantly change the way their companies do business in the 1990s.

Another positive note is that department managers are more

convinced than their bosses were a year ago that their companies are getting their money's worth for IS expenditures. Only about one-third of the top executives were sure that they were getting a full return for their IS dollars, while slightly more than half of the front-line managers agree that the returns justify their investments.

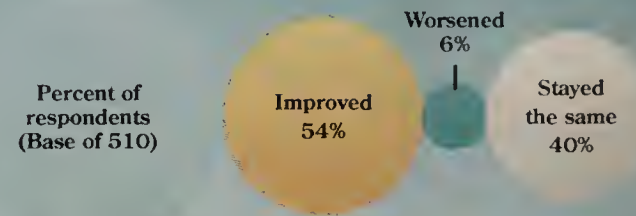
That's not to say that some department heads wouldn't like a firmer grip on the purse strings. Two in five of the departmental managers say their organization does not have enough control over IS spending, and more than one-fourth of them express some doubt about the way IS dollars are being spent in their companies.

John Scully, president of the retail sector at John Hancock Mutual Life Insurance Co. in Boston, falls into this group. The sector isn't getting the most from its spending on systems, he says, and the reason is a lack of

IS glasnost

On the whole, business managers say relations with IS are moving in a positive direction

"How has your department's relationship with IS changed during the past two years?"



CW Chart: Tom Monahan

technical terms in the past.

Finally, it can give a more "holistic" view of the company — an understanding of how actions in one department affect other departments and customers. Phelps may speak with some bias on this point, since he headed an IS unit at Colonial Penn Group for three years.

needs of salespeople and watches for barriers to the IS group's ability to support these needs. The retail sector is developing executive information systems that would have been unheard of a few years ago because of lack of communication, Scully says.

Business managers don't agree on the virtues of decentralization. Half of the survey respondents who say their relations with IS have worsened blame centralization and bureaucracy. But that group represents only 5% of the sample, and with two-thirds of the surveyed managers using a centralized IS group, the generally positive tone of responses suggests that centralization can work if handled properly.

"Decentralization is a bad thing. We need more standards, not fewer," says Michael Patrick, senior manager of market analysis in the U.S. consumer products group at S. C. Johnson & Sons, Inc. in Racine, Wis.

Patrick says he wants support from a strong, centralized IS group. Even with decentralized systems, he sees a role for that kind of organization. "Distributed processing doesn't take away the need for MIS departments to set a strategic vision on how information is collected and used," he says.

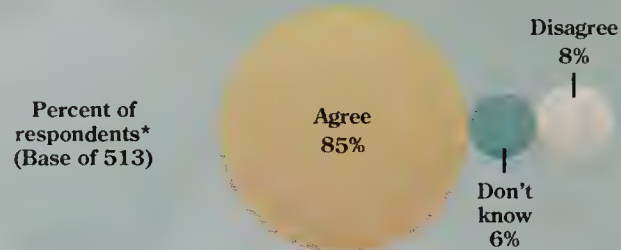
Looking favorably on centralization does not translate into a willingness to give up all voting rights, however. Along with a big chunk of the surveyed managers, Patrick wants to play a more active role in systems planning. Information systems organizations should work hand-in-glove with their users in setting a strategic direction for the use of technology, he says: "There has to be the ability to prioritize IS projects, and that can't happen in a vacuum."

Neither can system development, according to a significant percentage of the department managers. "No" votes predominate when asked if IS should take more initiative in developing

Vote of confidence

A vast majority of the user department managers surveyed believe information systems will play a critical role in their companies' future

"Information systems are the key to competitive advantage in the 1990s."



*Does not total 100% because of rounding

CW Chart: Tom Monahan

human and technical communication. The retail sector only recently began devising an architecture to tie systems together.

In addition, neither IS people nor users have communicated well enough to take advantage of the systems in place. "It's not the systems; it's the people on both sides," Scully says.

The communication gap between IS and users is not a gaping chasm. Slightly more than half of the surveyed managers say IS groups are doing a good job of communicating. Still, more than one-third of them indicate that the lines could be clearer, and it doesn't look like they will rest until the static is cleared up.

Phelps, for example, is a strong believer in cross-pollination between business departments and IS through assignment of IS executives to general management positions. "If you're suffering from some communication problems, that kind of shift can break down the barriers," he says.

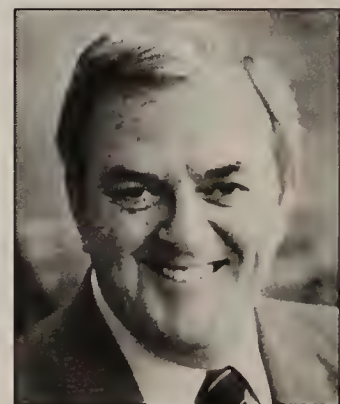
The experience can do several things for the IS person, Phelps says. It can help build credibility in the eyes of users. It can provide a business-oriented framework for discussing problems, when he may have used

John Hancock's retail sector is also trying to improve communications through job shifting. In this case, IS professionals are assigned to jobs in user departments for stints of six to 18 months. The program is new, but 12 of the 300 people in the IS organization have already had a taste of how the other half lives.

John Hancock also includes IS executives on the top management teams of the sectors, where they help shape strategic planning. According to Scully, however, the biggest boon to IS/business communication has been decentralization.

John Hancock decentralized IS management from the corporate level to its four sectors a few years ago. The move brought users and IS people closer together physically and in understanding one another's needs, Scully says.

The change was particularly helpful for the field sales force, which was cut off from corporate IS more than other groups were. Now a liaison anticipates the

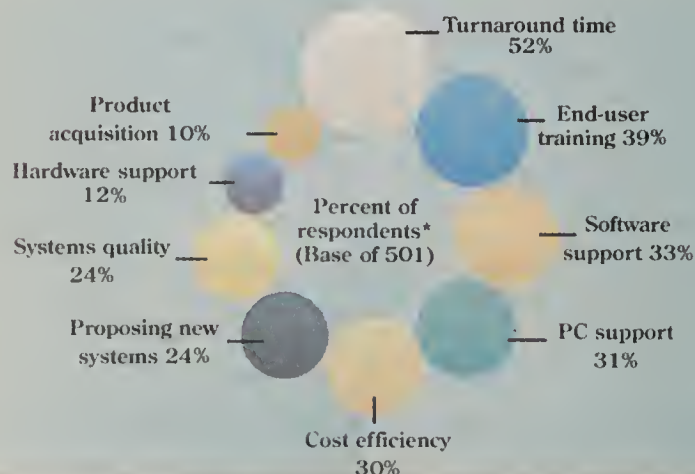


Hancock's Scully

Targets for improvement

Users say IS needs to focus more attention on turnaround time and support

"In which of the following areas does your company's IS department need the most improvement?"



*Multiple responses allowed

CW Chart: Tom Monahan

Sales types make tough critics

BY DAVID LUDLUM

If there's one department that is not fully sold on the performance of information systems, it's sales and marketing. In contrast with their colleagues in other departments, these managers offer up less praise and more petitions.

For example, half of the sales and marketing managers responding to the *Computerworld* survey say that their IS groups should take more initiative in developing systems, compared with two-fifths of managers overall. Fewer sales and marketing managers think they have enough control over IS spending.

The concern might start with expectations. While an overwhelming 85% of all managers surveyed say IS organizations are key to gaining a competitive advantage, the number jumps to 94% among sales and marketing people.

"There's no doubt that innovation in technology is one of the ways you can differentiate yourself from competitors these days," says John Gragnola, vice-president of research and planning for Allstate Insurance Co. at its facility in Menlo Park, Calif.

Sales and marketing managers are particularly preoccupied with what is a key concern of the managers overall — the need for better communications with IS professionals. A significant number of executives in only two functional areas choose to characterize their relationship with IS as "distant." One was engineering along with research and development; the other, sales and marketing. The engineering managers place slightly more emphasis on that word but are less likely than

sales and marketing managers to apply the adjective "adversarial."

Sales and marketing managers believe they are misunderstood. Two-fifths of them, compared with one-third of the total sample, say IS professionals do not understand their department's needs.

There is a history to these feelings. In discussing the findings, sales and marketing managers point to a historical lack of interaction between IS groups and their areas. In the beginning, IS organizations primarily developed financial applications and often were under the control of a financial unit.

There have been financial experts in IS organizations for years, according to one marketing manager. "They can crank out general-ledger systems, but you get them into marketing and sales and they're at sea."

Sales and marketing applications have emerged more recently and often are more complex than traditional number-crunching programs, incorporating ambiguous information that is highly refined and individually formatted. "It's clear what gross profit is; everybody knows the calculation," says Michael Patrick, senior manager of market analysis at S. C. Johnson & Son, Inc. in Racine, Wis. "It's not always clear, even if data is available, if you should price an item above \$2."

To address such questions, it is sometimes necessary to take a voluminous computer report and condense it into an accessible form, says James McCarter, manager of sales administration at Standard Steel in Burnham, Pa.

For their part, many sales and marketing people do not have a quantitative ori-

entation or much exposure to computers; they are paid for their ability to generate sales, not define system requirements.

"They know the information they need to do their business but may not know the data," Patrick says.

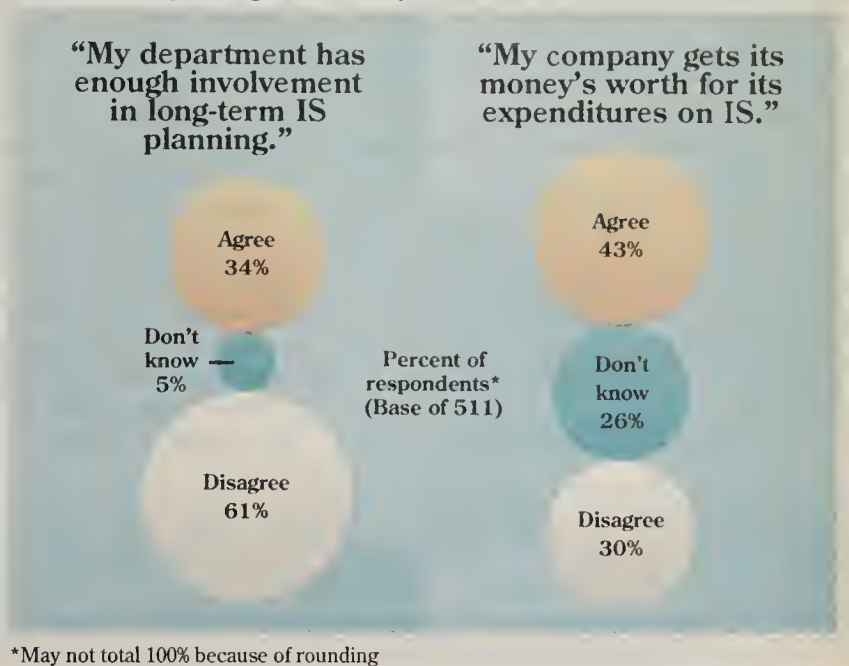
When they do know what they need, sometimes they do not understand the process.

"They think it's kind of like magic," says Ron Gellish, general manager of corporate research and planning at K Mart Corp. in Troy, Mich. "They think it's a matter of writing a program, and that might take a day or two."

Consequently, sales and marketing managers say, the systems delivered to them have not always been useful. In fact, only manufacturing and operations managers are more apt to agree when asked if IS delivers too much useless information.

Hard sell

Sales and marketing managers feel left out of long-term IS planning and are less convinced than those in other departments that their companies get full value for IS investments



CW Chart: Tom Monahan

Such disappointments may also explain why three-fifths of the sales and marketing managers who responded to the survey say they want more involvement in IS planning, compared with half of the managers overall.

Now they understand that they had better get involved or the system they end up with may be useless, Gellish says. "They realize tons and tons of paper doesn't mean they're going to have the answer." •

Acceptance

FROM PREVIOUS PAGE

systems for their departments. Assistance is welcome, but there are conditions. "Until we become more proficient, we're really dependent on [IS] to be the leaders in that area," says Robert Harris, manager at Pacific Gas & Electric Co. in San Francisco.

Scully also qualifies the notion that IS staff should take more initiative in the development of systems; he says they should be active but that the users should be the leaders.

At S. C. Johnson, some users have seized the initiative in developing systems. Last year, managers in Patrick's market analysis group wanted to move part of their mainframe decision support system to personal computer graphics software. Rather than wait to get the project on the IS group's agenda, they developed their own

prototype, programming within mainframe and PC software packages.

The episode, and the creation of the market analysis organization last year, illustrates how boundaries between IS organizations and their users are blurring, Patrick says. Along with computer skills, users are acquiring a command of IS issues. They may not understand the areas as well as IS professionals, but they often bring a better business perspective to the mix, according to Patrick. But it is still

crucial to have a central IS group to put prototypes into production mode, he adds.

In another indication of PC literacy, two-fifths of the surveyed managers say they use a computer to do work at home. Patrick is one such manager. He has three home computers — an IBM PC AT networked to two machines from the now-defunct Victor Computing Co., for which he once wrote a marketing plan. "Computing is very much a part of my life," he says. •



Joyce Ravid

S. C. Johnson's Patrick

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Word associations don't emphasize 'strategic'

BY JODIE NAZE

Throw the term "information systems" at a group of user department managers, and what do you think you get in the way of reactions? If your guess was surly adjectives and epithets, you're in for a pleasant surprise.

Yet, in the face of promising results, it is clear from *Computerworld's* survey of user department managers that very little ground has been gained in getting this group to make an automatic connection between IS and the terms strategic plan-

Naze is a *Computerworld* researcher, features.

ning or competitive advantage.

When departmental managers were asked to come up with three or four words that described what information systems meant to them, fewer than 3% came up with phrases incorporating either term.

Many of the responding managers played their answers very straight and tossed back "computers." After that, things became more interesting. Almost one quarter of the total sample associated information systems with data and databases, and the manufacturing and

operations managers pushed the connection even further: Information systems spelled data to almost one-third of those respondents.

When managers talk about data and databases, or even reports (which was another word that popped up in the minds of 10%), they don't necessarily mean raw information or more information.

For example, when David Spurgeon, planning manager at Micron Technology, Inc. in Boise, Idaho, says that he looks to IS for data, he stresses the qualifier "meaningful."



"The data received is correct but is not as meaningful as it could be if IS had some understanding of the manufacturing industry itself," Spurgeon says.

Actually, to most managers, the idea of reports was slightly less appealing than that of information systems as an information resource and a kind of on-line library. Sales and marketing managers were most apt to attach the words "informative," "resource" and "library" to information systems. Accounting and finance executives were, by a wide margin, the most wedded to the concept of "reports."

The cost of information systems is clearly a prominent issue in the minds of department managers; more than 12% picked words such as "money," "finance" and "expensive." That's not a big chunk in itself, but it looms larger when compared with the 3% who used such terms as "cost-effective" and "profitable."

Henry J. Davis, group controller at Reliance Electric in Greenville, S.C., says that "we are receiving an allocation of the IS budget, and because of this, we expect a certain level of service."

Speed and performance were also ranked high, although it is not completely clear whether the executives' answers were a description of their actual information



systems or wishful thinking. Ten percent of the managers offered up words such as "timeliness," "speed" and "responsiveness," but some may have been responding in the same spirit as Debbie Kuale, manager of financial services at Saint Vincent Hospital in Billings, Mont. She says that the IS department isn't timely enough: "They are slow in getting us the special reports we've asked for. If it is anything ad hoc, they have a problem with producing it. On the whole, I think the IS department could be more responsive to our needs."

If spur-of-the-moment word associations are any indication, definitions of need vary. As already mentioned, manufacturing and operations managers were more concerned than most about data and databases. They also mentioned communications and telecommunications with far greater frequency than any other department, although networks popped up most often in the responses from administration/human resources and engineering/research and development managers.

Sales and marketing managers were almost twice as likely as any of their peers to emphasize user-friendliness and placed a high priority on speed and responsiveness. Sales types mentioned these issues in a positive context, however, without any signs of frustration. Speed and responsiveness also figured high in responses from accounting and finance managers but reflected more frustration, as seen in the words "slow" and "unresponsive."

Verbatim responses offered a year ago by top executives who participated in a similar CW survey produced reactions that were alike in many ways. Line managers, on the whole, were more concerned with the cost of information systems than their bosses and mentioned speed and responsiveness with greater frequency. Based on their word choices, user department managers seemed less vocally frustrated or worried about productivity shortfalls. •

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Bridge maintenance

With good intelligence, IS can anticipate users' thinking

BY RICHARD S. MATHEWS

Let's face it: Users think differently than information systems professionals do, and no matter how hard IS organizations try, the two groups will never reach total agreement. By monitoring and responding to user opinions, however, IS can help narrow the gap.

IS groups tend to think in terms of what they control, what they deliver and what they can measure quantitatively. Users, on the other hand, typically think in terms of what they receive, which entails the entire delivery cycle, not just the part that IS controls.

A classic example of this difference in thinking is systems availability. Through experience with clients, I've noticed that although an IS group may say the system is up 99.8% of the time, the users say it is up only 90% or 95% of the time. To IS, the word "system" means the central processor; to the user, it means his application. And whereas "up" to IS means the computer is running, to the user it means he can access his application; the user makes no allowances for line or terminal problems. The key point to remember is that IS must think end-to-end when reconciling differences in user perceptions.

Keep 'em satisfied

The first step toward improving IS/user relations is to assess customer satisfaction. Users will say they are satisfied when IS' performance meets or exceeds their expectations. Concentrating on performance alone, however, doesn't ensure satisfaction. What IS needs to do is ascertain customer expectations and then gear performance to them.

Several methods can be used to identify expectations and measure customer satisfaction. These methods include one-on-one interviews, focus groups and surveys.

One-on-one interviews can be an effective way to ascertain how customers feel about a variety of subjects, both qualitatively and quantitatively. However, they are also the most time-consuming and costly approach. For these reasons, interviews are most often used for polling higher level customers and members of senior management.

Focus groups, in which an interviewer speaks with several customers, are a valuable means of scoping out issues that may merit a general survey and pretesting the survey instrument. Results from focus groups, however, should be viewed as input to the survey and questionnaire design, not as final conclusions.

Telephone surveys offer many of the advantages of a personal interview at a lower cost. In addition, the survey process via telephone can be completed quickly. By following a prepared script, one can often glean more precise information than in a personal interview, but the length of the discussion and the number of manageable questions is somewhat restricted.

Site-administered surveys, which involve written questionnaires accompa-

nied by an on-site administrator to answer questions, are useful for long or complex queries. Generally, it's possible to poll a group in just a few days, but scheduling participants to attend the guided sessions can be time-consuming and tedious. It is most economical when the people being surveyed can go to a central facility to complete the questionnaire.

Mail surveys are well-suited to collecting potentially large amounts of data from a widely dispersed geographic customer base at relatively low cost. A printed for-

mat permits use of long lists of questions, importance ratings and open-ended narrative responses.

Whichever method is used, IS should conduct satisfaction surveys at regular intervals. The time frame will depend on what other vehicles for customer feedback are in place and how effective they are. A good rule is to conduct general surveys annually and continually monitor areas with which users are dissatisfied.

Special attention should be given to survey design issues and the data collection process to ensure that results are both reliable and valid. The surveys should encompass an adequate sampling of customers to provide a high confidence level in the results. Factors that should be taken into account when determining

sample size include the following:

- How many customers IS serves.
- The desired level of statistical accuracy.
- An assumed ratings standard deviation.

Initial survey ratings can establish a baseline for measuring year-to-year improvement. By focusing on continuous improvement rather than fault-finding, the IS staff should buy into the survey process more enthusiastically and actively seek customer feedback.

At all times during a survey, IS must be aware of its obligations to users. They need a legitimate reason to spend time answering questions. IS should inform users of the results and then follow up on problem areas to demonstrate that solicited opinions really do lead to better or continued good customer service. •



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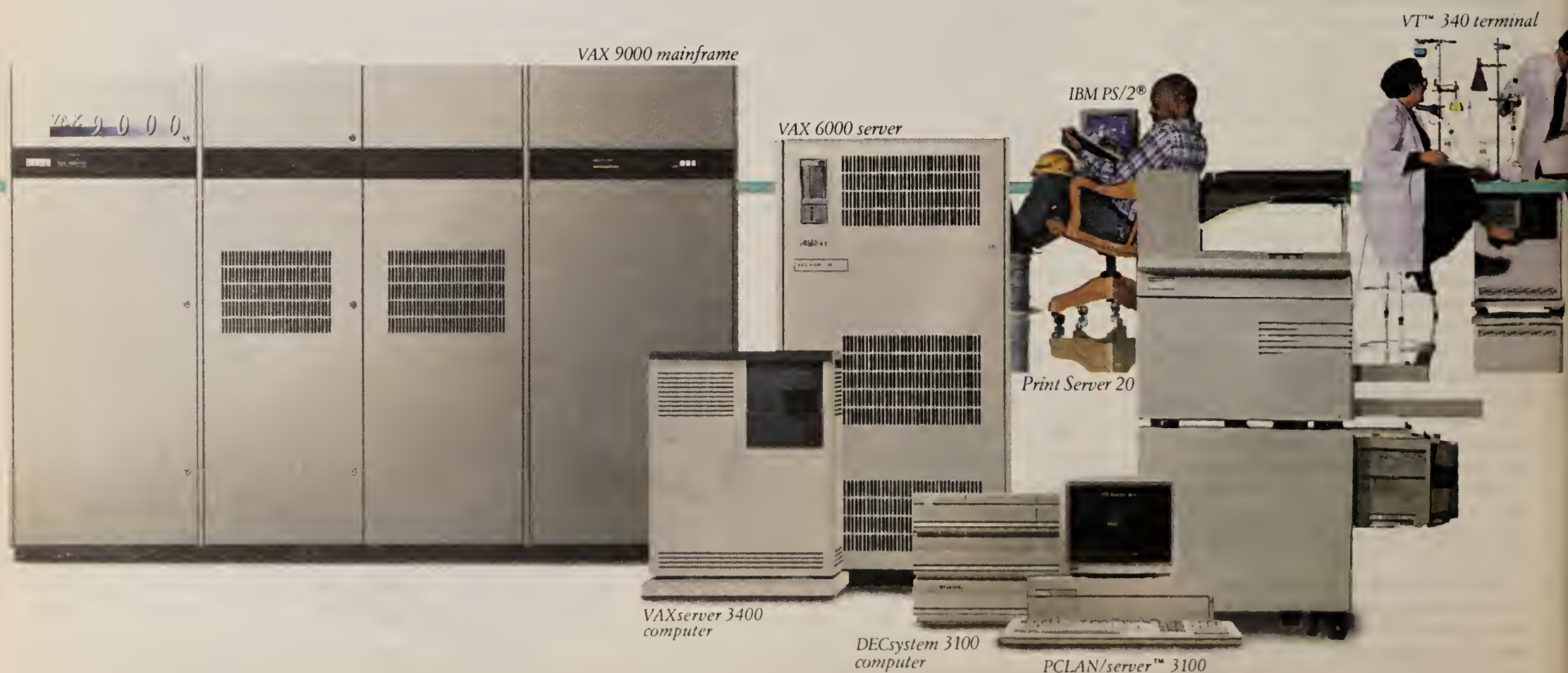
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Internal groups forced to fight in the real world

BY JOHN WEBSTER

Information systems organizations no longer have a guaranteed monopoly on providing services within their own companies. Corporate management is opening the door to competition by encouraging users to shop around for support.

This strategic shift isn't meant to snub internal IS organizations; rather, it's designed to spur improvement in the quality and efficiency of IS services by forcing IS to compete against outside providers.

Webster is a free-lance writer based in San Francisco.

Bill Rosser, a consultant at Gartner Group, Inc., in Stamford, Conn., sees an increasing number of IS groups operating in this type of environment. "If the main information systems department doesn't offer a service or is too expensive, users will look elsewhere," he says.

Facing competition from outside the company has spawned IS department marketing, a new twist to traditional service-on-request duties.

"If IS is to survive and be the vendor of choice for services, the department must have marketability. CIOs see competition as healthy to a company's overall goals," says Paul Ouellette, president of Ouel-

lette & Associates, Inc. in Bedford, N.H. Ouellette says he has seen growing demand among company managers for IS staffs to learn marketing skills and offer competitive support services.

Approximately two years ago, Bell Atlantic Corp. in Philadelphia began requiring several departments, including IS, to provide their in-house client services as if they were independent businesses soliciting customers. These departments must now compete directly against outside suppliers.

The central IS organization at Bell Atlantic has instituted a support plan for its employees that includes helping them de-

velop strategies, accounting plans and budgets related to marketing to their internal clients.

The IS group began charging its customers in January 1989, and it now formally establishes contracts for services that specify project requirements and costs with individual user departments. The IS organization is still centralized and offers services, but the arrangement is more flexible.

Since the restructuring, IS officials at Bell Atlantic have had to change attitudes within their group. The department had to become more "client-focused and entrepreneurial," says David Frieder, managing director of IS.

As part of the shift, the IS group established account managers within the group to oversee client sites within the company, Frieder says. Information systems employees were required to attend courses on dealing with customers and understanding client needs. Instruction on consulting skills became part of IS job training. This tactic was designed to beef up account managers' knowledge of a client's business and measure the effectiveness of the organization's service.

"Before [restructuring], we would wait for clients to come to us. We weren't out there recommending changes," Frieder explains. "Now we take a more active role in seeking out where we can be helpful. We win the vast majority of those [projects] we bid on."

Know it all

When they don't win, the reason may be that IS lacks the necessary skills. For example, the marketing department needed to build decision-support tools 2½ years ago for a relational database project.

In this instance, the technology required extensive knowledge of SQL. Lack of in-house SQL expertise compelled the marketing department to hire a consulting firm to complete this portion of the job. The IS group is currently acquiring SQL expertise so it can bid on later stages of the project.

"Since the IS side of the shop didn't have fourth-generation language background, [it was] forced to come up to speed in that area. [IS] had to sense clients' needs and adjust to them," says marketing executive Michael Henrici, who previously worked in IS. "The IS department has become more end-user focused, and it's more flexible for the clients as far as where they can go for services."

IS officials at Security Pacific Automation Co., which coordinates the IS activities of Los Angeles-based Security Pacific Corp., found that they had to aggressively seek in-house clients.

"The reality was that we couldn't wait for the business to come to us. We established [IS] line organizations that were matched with business groups. Each line organization gained a thorough knowledge of business goals, and from that [experience], we can [now] bid competitively for services," explains Dale Terrell, executive vice-president of IS.

This new competitive environment is benefiting both IS and end users, according to Joseph Ambrozzi, vice-president of IS at Bell Atlantic. "My people start behaving like businesspeople in terms of timeliness, cost and content of service," he says. "They're learning more about what customers want, and customers like the idea of someone worrying about their long-term needs and delivering a cost-competitive system." •

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Colleges, retailers clash

Campus

FROM PAGE 1

evaluated conservatively at more than \$1 billion per year. They say schools gain an unfair competitive advantage from privileged access to the academic community, government subsidies and tax-exempt status.

"There is no possible way that any retailer can compete with a non-profit university," Schachter says.

They also assert that salaried faculty and other university employees should pay the same prices as the rest of the buying public.

"We're not against them having cookie sales," says Theresa Stanion, director for government relations at the International Communications Industries Association in Fairfax, Va. "But when their business is identical to [that of] small business, then something is definitely wrong."

The battle over campus PC sales is being waged at both the federal and state levels. Retailers, through the Washington, D.C.-based Business Coalition for Fair Competition, are lobby-

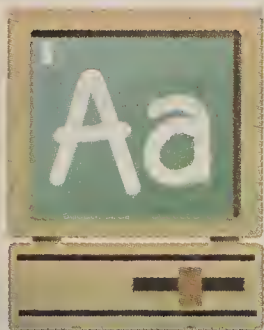
ing Congress to pass a provision in a new tax law that would restrict campus discounting. Proponents of the Unrelated Business Income Tax, or UBIT, say its adoption at the federal level would send a go-ahead signal to state legislatures. A Treasury Department report expected out this month should outline the Bush administration's viewpoint on the issue.

Dealers have already succeeded in getting legislators in Michigan, Kansas, California, Indiana, Kentucky, Ohio and Texas to hold hearings on the issue.

Universities are sure to put up a tough fight. "Institutions of higher education should be called to the barricades if there is a serious attempt to do this," says Kenneth King, president of Educom, the association of academic computing professionals.

The battle, which has been brewing for three years, could boil over at a time when many political and business leaders are calling on higher education to better prepare students for competition in a world dependent on information technologies.

"If you reduce their ability to get those [computing] skills," King says, "you are ultimately



Katherine Lambert

Educom's King calls PCs vital to educational mission

hurting the country."

His views are echoed by other university officials. "Our goal should be that every student own a computer," says Henry Schaffer, associate provost for academic computing at North Carolina State University at Raleigh. Restrictive legislation proposed by retailers, he says, "could make harder or ultimately foil" successful attainment of that objective.

Retailers, who say universities should not be in the business of selling computers at all, are particularly irate about so-called grey market sales, in which PCs sold at a discount by a school end up in the hands of people unaffiliated with the university. Contracts between schools and vendors stipulate that only students, faculty and university employees are eligible for discounts.

"At the end of the semester," says Jim Downey, sales director at Applied Graphics, an authorized Apple Computer, Inc. dealer located six miles from Dartmouth College in Hanover, N.H., "students come in to try selling us Apple computers — brand new and still in the box — that they bought for less than we can buy them." The students have no trouble finding interested buyers, he says.

Dartmouth sells more than 1,500 Apple Macintoshes a year

to incoming freshmen, reportedly at 47% off list price. Chips Computer Center, the largest PC retailer in Hanover and perhaps the oldest Apple dealer in New England, struggled to maintain sales to the academic community until the store was sold in August 1988, according to then-sales manager Jake Blum. If Dartmouth had not been selling at such a high discount, Blum says, Chips' owners "would definitely have gotten a crack at that market and done better." The store's new owners moved out of Hanover last summer.

Educators and school administrators argue that giving students access to low-cost PCs is part of their educational mission. "We're not computer dealers, and we're not trying to be," says Kay Farley, manager of Kansas State University's bookstore in Manhattan, Kan. "We want to further computer literacy." They warn that the consequence of limiting sales would be to deny students access to computers at prices they can afford.

"There would be far fewer students who would learn to compute in college," King says. "Business would suffer, and the computer industry would suffer."

In addition, universities cite financial constraints in explaining their refusal to stop selling



David Kagan

ABCD's Venator says that schools benefit unfairly

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PCs. Schaffer says that by bundling the university's own PC purchases with student sales, he has been able to benefit from vendors' volume discounts. Depending on product and configuration, vendors generally offer universities discounts of 40% to 55% off list price.

Making it harder for students and faculty to acquire computers would be "silly and shortsighted," says James Poage, vice-provost for academic computing at Dartmouth.

Nonetheless, retailers say they intend to combat university discounting more aggressively. "Organizations are becoming galvanized," says John Venator, executive vice-president and chief executive officer of ABCD, the microcomputer industry association. They will seek pas-



Myles Schachter's PC revenue fell 91%

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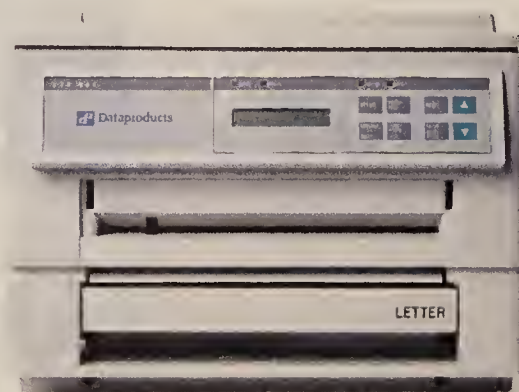
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sage of legislation in "key" states, he says: "Once that happens, a slow domino effect will lead other states to follow."

Retailer associations, including ABCD and ICIA, plan to meet in Washington, D.C., tomorrow to outline their campaign. Officials will present a model bill for adoption by state legislatures and announce results of a just-completed survey in which dealers estimated having lost \$110.4 million last year because of unfair competition from nonprofit institutions.

For some, such as Gerald Brong, owner of Community Computer Centers in Pullman, Wash., the lost sales spelled the end of their business. Brong filed for protection from creditors under Chapter 11 in 1986 after struggling to compete with Washington State University. The school, he says, began selling PCs a year after Brong opened his store in 1982. With 17,000 of the town's 22,000 inhabitants affiliated with the school, Brong was at a definite disadvantage. He estimates that the university siphoned off about \$700,000 in potential sales last year. Although he says his four-person business returned to profitability this year, Brong plans to sell all remaining assets to pay off \$220,000 in remaining debt.

Figures on the size of the academic computing market are hard to come by. The National Association of College Bookstores estimates that its 2,900 members' sales totaled \$294.5 million in hardware and \$16.4 million in software in 1989. Executive Director Garis Distelhorst estimates that other campus PC outlets sell two to three times that much.

Adding purchases made by colleges and universities for on-campus use makes the total market size much bigger. Buzz Waterhouse, academic information systems executive at IBM, puts higher education purchases of PCs at \$2 billion to \$2.7 billion annually. Kenneth Green, senior research associate at the Center for Scholarly Technology at the University of Southern California at Los Angeles, says his research suggests that the total desktop market in higher education, including retail sales, is worth \$5 billion yearly.

Noting the size of the market, ICIA Executive Vice-President Kenton Pattie says universities are reluctant to give up a major source of revenue. "Universities have so much at stake that they're not going to give up easily," he says. "Their greed is almost too transparent."

Retailers say university officials show little sympathy for the problems of small business. Rick Weir, regional president of AC3 Computer Center, Inc. in Ann Arbor, Mich., says that the University of Michigan sold \$14 million of computers at 50% off list price during two days last October. Such so-called truckload sales make it tough to compete, he says. "The University of Michigan is the most aggressive and predatory business I've ever dealt with," Weir says.

Academic officials counter that their schools are not making money on the sales. Rather, they say, they are simply conduits for discounts made available by computer vendors. Schools say that they add only a slight margin to cover operating expenses.

University officials warn that, if passed, legislation demanded by retailers would force them to raise PC prices on campus. "One thing is certain," says Caspa Harris, executive director of the National Association of College and University Business Officers, "all additional costs will be passed on to students." •

PC makers, dealers eye university market prize

BY AMIEL KORDEL

Although they would prefer staying above the fray, computer manufacturers supplying discounted products are fueling the controversy pitting universities against personal computer dealers. They tread lightly between the two camps, taking great pains to calm the ire of their commercial distribution channel while keeping open the flow of PCs to the powerful higher education community.

"Vendors are trying to keep a low profile," says Robert Gillespie, an academic computing consultant in Issaquah, Wash.

The higher education market is important to vendors for several reasons:

- About one-fourth of the 13.5 million students at the country's 3,587 colleges and universities own a computer. The market is also self-replenishing, with new students entering schools each year.
- Information systems are one of the fastest growing line items in university budgets, accounting for a nearly \$10 billion annual market.
- The intellectually active world of campus computing is condu-

higher education marketing at Apple.

"This technology has become an integral part of education," says Ken Lilienfeld, manager of

student desktop marketing at IBM.

IBM revised pricing policies last year for the academic market in an effort to appease dealers. "We try to encourage universities to partner with the dealer," Lilienfeld says.

In June 1989, IBM increased the fee paid to dealers that agreed to distribute PCs sold through campus programs. That

payment, he says, rose three percentage points to between 7% and 10% of net price. As a result, he adds, the number of participating dealers rose from 230 at the end of 1988 to 750 at the end of 1989. At the same time, IBM increased to 40% the volume discount offered to all 1,700 schools that buy from it.

Apple, which sells half a billion dollars' worth of products to

higher education each year, is in the process of reviewing its pricing policy, Cummings says.

Apple says it has been trying to convince schools to team up with local authorized dealers for support and services. In return, the dealers collect a percentage fee. The number of schools choosing to partner with dealers has doubled to 350 during the last year, Cummings says. •

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Campus market

- Number of colleges and universities: 3,587
- Students: 13.5 million
- Faculty: 730,000
- Nonfaculty employees: 1.26 million
- Yearly PC purchases: \$5 billion

Sources: Department of Education, Equal Opportunity and Employment Commission, Center for Scholarly Technology (University of Southern California)

cive to rigorous beta-testing and innovative applications development. Steve Jobs turned to the academic community to develop initial interest in both the Apple Computer, Inc. Macintosh and his newer Next, Inc. computer.

• The academic market is thought to be influential. Vendors hope to hook students on their products before they enter the professional computing world.

• Campus contracts are prestigious, adding credibility to a company's products.

• Manufacturers can unload stocks of unsuccessful products by discounting them on the academic market.

Although vendors say they have sought to alleviate some of the dealers' concerns, when push comes to shove, they seem to side with the universities. "The Mac and our other computers are educational tools," says Burt Cummings, director of

*"I suppose, Dorfman, in its broadest sense,
you could call this networking."*

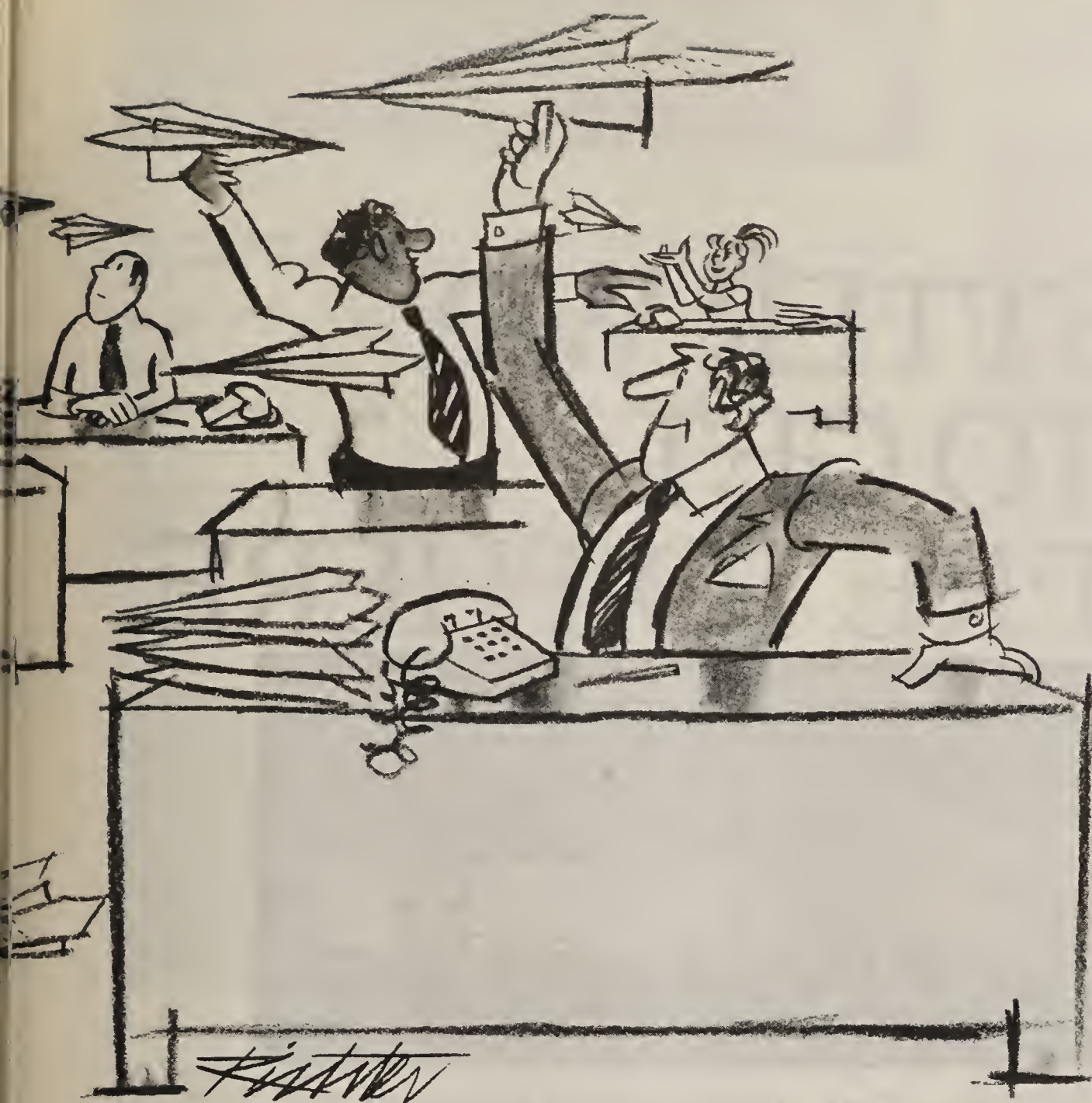


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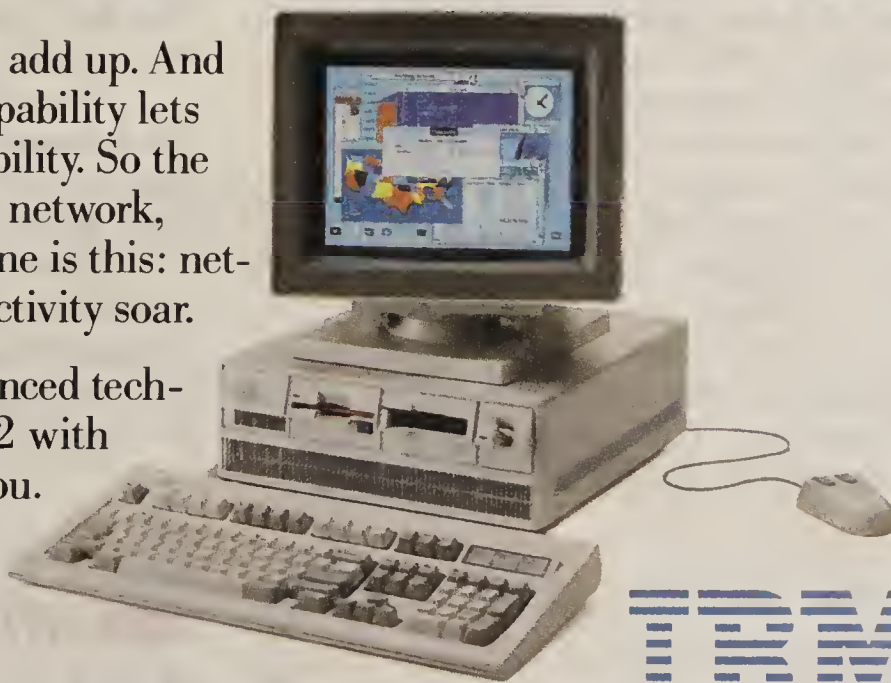
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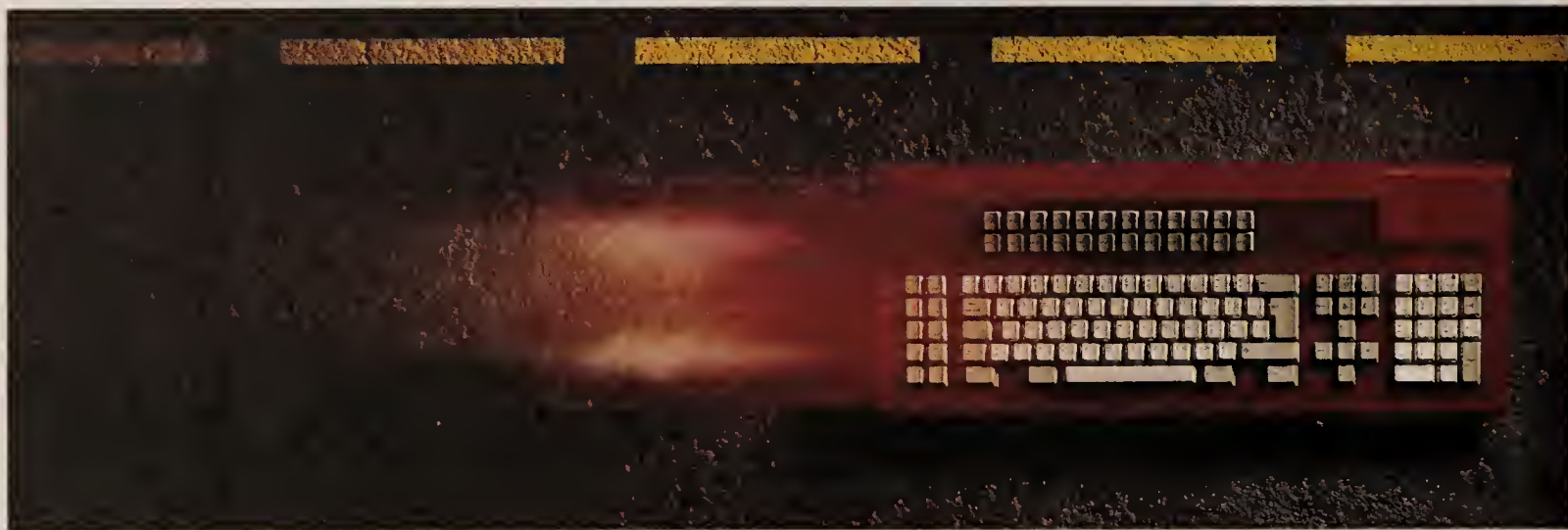
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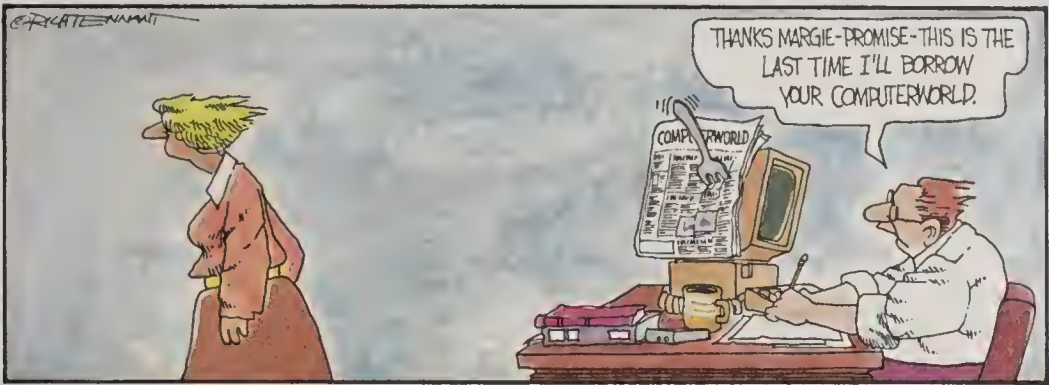
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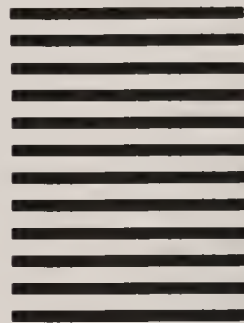
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INDUSTRY INSIGHT

Jean S. Bozman

U.S.' plight: Factory flight



As tough times in the computer industry continue, U.S. jobs are getting cut cross-country from Massachusetts' Route 128 to Silicon Valley's Highway 101. And a rebound won't necessarily spell relief for American workers, as more of the new computer industry jobs move overseas — and as automation of computer factories continues at home.

Maybe even more importantly, a rebound won't return to the U.S. the technological know-how — the ownership of the process — that is carelessly exported every time manufacturing is shipped overseas.

Next's state-of-the-art factory in Fremont, Calif., might have the look of computer factories to come: There are 13 robots to every five workers, according to the company. The automation limits labor costs to less than 5% of total overhead, and it also brings some quality improvements, Next claims.

It's hard to argue with cost control and quality. However, there are also some intangibles in the rough-and-tumble of global manufacturing. Gordon Moore, chief executive officer of

Continued on page 99

AI 'visionary' down but not out

Osborne resigns from Paperback Software to launch his own venture

BY PATRICIA KEEFE
CW STAFF

Paperback Software International may be down, but don't count the unsinkable Adam Osborne out. The self-described industry visionary is already plotting his next reincarnation: developer of a thinking machine.

Despite failures by some well-known artificial intelligence specialists, Osborne said he is the man who can do it. "I know how to build a machine that thinks like a person thinks," he said.

Osborne resigned two weeks ago as director and an officer of Paperback, suggesting that the company liquidate after selling him its high-end product, VP Expert. His offer to purchase the application is now pending before the board.

Efforts to reach Paperback for comment were unsuccessful.

Paperback, a software marketer, fell upon hard times after Lotus Development Corp. filed a copyright infringement suit against the firm three years ago, targeting its VP Planner spread-

sheet. The trial ended a few weeks ago; the court's decision is expected by mid-April.

Osborne said that when Lotus filed suit, "I knew enough about the cost and methods of litigation in this country to know that the best we could do is to win [the suit], but that the company would be destroyed."

To complicate matters, Pa-

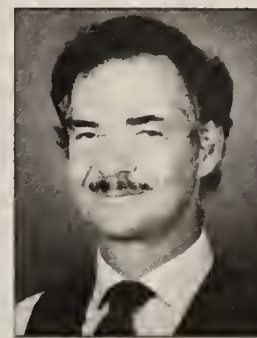
perback's insurer balked at paying its legal fees and filed suit to avoid it.

It has been paying court costs, but Paperback was forced to come up with \$10,000 in additional legal fees, in part to force the insurer to fulfill its obligation.

What Paperback needs is someone who can work the numbers carefully to "eke out an existence," he said. "Let's face it — they don't need

someone like me. I'm a visionary, I know what will happen in

Continued on page 98



Adam Osborne:
'I'm a visionary'

Gandalf prunes staff from U.S. operations

BY ELLIS BOOKER
CW STAFF

OTTAWA — Citing weak sales worldwide and a \$9.3 million loss in the second quarter, Gandalf Technologies, Inc. underwent a major downsizing, slashing yet again the size of its U.S. work force and eliminating one of its three business products groups.

The picture has been particularly bleak in the U.S., where the Canadian-based networking vendor established a beachhead in 1974.

The company's U.S. revenue has steadily declined; total worldwide sales for 1988 and 1989 were essentially flat (see chart page 99).

The heaviest cuts will hit the Wheeling, Ill.-based U.S. operation, Gandalf Data, Inc., which has been reduced since last month from 285 to 186 workers. In early February, Gandalf cut its worldwide staff of 1,500 by 70 people. Two weeks later, in another round of terminations — this time, almost exclusively U.S.-based — 46



Gandalf's
Cunningham

employees were let go. In 1988, Gandalf laid off 90 manufacturing workers in the U.S. and moved its component assembly to an automated plant in Canada.

However, Gandalf has "no intention whatsoever of moving out of the U.S. market," Chairman and Chief Executive Officer Desmond Cunningham said. While describing the cutbacks as "biting a bullet," he said Canadian companies cannot be successful without a U.S. presence.

Fourth quarter looking up

While anticipating a loss for the year, Cunningham said the restructuring charges would be justified by later improvements in the company's bottom line. Sales in the third quarter would be flat with last year, he predicted, but slightly up in the fourth quarter.

Retreat or no, the cuts are a blow for 20-year-old Gandalf, which has spent the last three

years moving from peripheral communications products such as multiplexers and modems into the spotlight with software-controlled networking systems.

Starmaster, its flagship network management system, and associated multiplexer and modem sales now account for 60% of total sales, Cunningham said.

However, some observers said they worry that Starmaster is being superseded by improvements in the likes of Open Systems Interconnect (OSI) products. Moreover, to enhance Starmaster, Gandalf faces increasing research and development expenses in the face of financial woes.

"They're clearly trying to pare down expense levels without hurting their revenue-generating capability," said Mark Lawrence, a senior analyst at Prudential-Bache Securities Canada Ltd., who said he feels Gan-

Continued on page 99

Applications Expertise

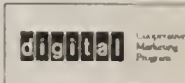
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Osborne

FROM PAGE 97

five years, and I can produce it in advance of everyone else. There [aren't] going to be another two or five years for Paperback, so why pay my salary?

"I felt I owed it to Paperback and its customers to fight the suit, and now there is nothing more I can do," Osborne added. He said the suit has been expensive for him on both a personal and business level, and he would now like to get on with his life.

This means raising capital in an admittedly tight market to launch an AI company built around VP Expert. He expects to succeed because of what he says is a "flawless track record" in ferreting out market opportunities and providing requisite products well before the rest of the market.

Osborne plans to port VP Expert to multiplatforms and then come up with a high-end box incorporating neural, reduced instruction set computing, fuzzy logic, chaos and statistical capabilities. "You've got to have them all," he said.

The new venture would be split between development work done in India and the U.S.-based marketing operations.

Kaypro loses face, but not name

Claiming bankruptcy, PC vendor has nothing left to rely on but its legend

BY RICHARD PASTORE
CW STAFF

SOLANA BEACH, Calif. — What's in a name? For Kaypro Corp., name recognition may be the only thing it has going for it, observers said last week.

After suffering more than \$56 million in losses over the last six years, the personal computer maker filed for Chapter 11 bankruptcy protection earlier this month. The decision came two weeks after the arrival of new President Roy Salisbury, who replaced David Kay. Kay, son of company founder and Chairman of the Board Andrew Kay, relinquished his post after serving only 14 days.

"The decision to file had to be made quickly," said Mark Seaver, vice-president of operations, who came aboard with Salisbury. "We tried to convince the powers-that-be for about two weeks."

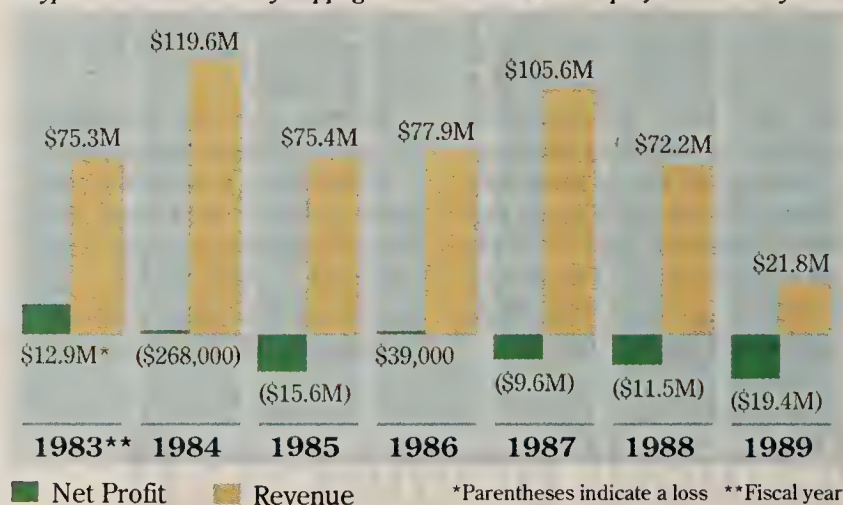
Kaypro, along with Commodore Business Machines, Inc., was one of the first PC vendors to hit the scene in the early 1980s.

However, the company made mistakes, Seaver admitted. It was too slow to abandon CP/M, an early PC operating system that was eclipsed by DOS as the industry standard. Too many faulty chip sets made it out the

sions leveraging the name to tap the corporate market with higher end products, repairing dealer relations and competing on quality and price with the strongest of the second-tier vendors, according to Seaver.

Downside

Kaypro has shown steady slippage in both revenue and profit in recent years



Source: Kaypro Corp.

CW Chart: Doreen Dahle

door. Dealers, tired of waiting ages for replacement parts, defected.

Kaypro's comeback plan envi-

"To challenge [Kaypro's most direct competitors] is a tall order," said George Thompson, an analyst at Datapro Research

in Delran, N.J. "These second-tier companies have sprinted way past Kaypro."

Nonetheless, Kaypro is thinking big. It plans to funnel some of its scarce resources into a new field sales force to help crack corporate accounts.

TO FORGET [small business users] would be a major faux pas; Apple proved that."

MARK SEAVER
KAYPRO

Despite its nod in the direction of corporate dollars and high-end machines, Kaypro does not intend to abandon its bread-and-butter home and small business users. "To forget those people would be a major faux pas; Apple proved that," Seaver said. "We're still selling thousands of [Intel] 8088s."

Kaypro's plan will require more capital than it currently has, analysts said. "They need to sell stock, or they have to sign some licensing or intercompany agreements to borrow technology," Thompson said. Otherwise, "it's going to be tough."

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Gandalf

FROM PAGE 97

dalf has no more fat to cut without hurting its R&D efforts or sales and support operations.

Lawrence praised Gandalf for its know-how in networking and its ability to evolve a product line without leaving early customers in the dust. But, he continued, "Their days of running as an in-

agement and put other activities on hold for six months.

In addition to the recent staff reductions, Gandalf eliminated its Systems Group, which had been selling information systems to manufacturers as well as computer dispatching and mobile networking products. The Redifacts manufacturing systems division was amalgamated with Gandalf's Enterprise Networks Group, which handles Gandalf's

Dieting for dollars

Gandalf is slimming down to tighten its focus and shore up its revenue stream

Total revenue	Percent of revenue from:				
	U.S.	Canada	UK	Cont. Europe	Other
1989 \$138.9M	31%	30%	19%	16%	4%
1988 \$135.7M	34%	28%	18%	17%	3%
1987 \$107.9M	36%	30%	16%	15%	3%
1986 \$89.5M	43%	29%	16%	9%	3%
1985 \$71.2M	49%	30%	12%	6%	3%

Source: Gandalf Technologies, Inc.

CW Chart: Doreen Dahle

dependent may be numbered."

A number of analysts said that Gandalf's 1988 failed hostile takeover of Case Group PLC, a networking and packet-switching vendor that was eventually acquired by Dowty Group PLC, preoccupied Gandalf's top man-

Starmaster. The firm also said it would seek a majority interest partner for its dispatching and mobile networking division.

Analysts were unanimously happy to see the demise of the Systems Group, calling it ancillary to Gandalf's core business.

Bozman

FROM PAGE 97

Intel Corp., thinks that a sea change is taking place in the way computer companies make products. Speaking at a recent American Electronics Association (AEA) conference in San Jose, Calif., Moore said: "I think we'll see more and more integrated circuits manufacturing operations getting heavily automated to keep those manufacturing plants in the U.S."

Moore apparently has no objection to the ongoing globalization of the computer industry. After all, Intel has design centers in Europe, Asia and Israel. In addition to its manufacturing sites, it has factories overseas.

However, the Intel chief does seem to have a problem with the transfer of manufacturing operations overseas. "The creation of jobs overseas is no big deal," Moore said. "The exodus of manufacturing overseas is a very big deal, because manufacturing is the primary way we add value."

There is, of course, a counter-argument, and many companies are making it daily. It goes something like this: How can this firm compete in the global marketplace if we don't

find a less expensive way of, or place to, manufacture? Storage Technology Corp. makes some components here — and some over there — and would like to market more of its products overseas. "I would love to be in the Eastern European Bloc, if there was some way to do it," said Ryal Poppa, CEO of Storage Tek, who also addressed the AEA meeting on the topic of globalization. "I would love to be in China, but many of our

the entry-level wages are pegged at \$5 to \$6 per hour.

What to do? There is no easy solution, Moore said. U.S. computer executives see the increasing competition from Europe and the Far East — and feel compelled to react to it. "There's a need for 'patient' capital in this country," Poppa observed. "The U.S. will only become competitive in manufacturing when we reduce the high cost of capital."

Moore said the U.S. must restate its commitment to manufacturing or become a weak nation in the global community. Until and unless we preserve the technological ability that is a function of design and manufacture, not assembly and sales, he said, we risk selling out our nation's collective future for the current success of individual firms.

It will matter, after all, whether the computer factory's whistle blows on U.S. soil. "There are some in our industry [who] say they'll do whatever is necessary to become more competitive — that they are no longer affiliated with a single country," Moore said. "I'm not ready to take that step yet."

Bozman is *Computerworld's* West Coast bureau chief.

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products are blocked from being shipped to those places by our Department of Defense."

The Storage Tek jobs that are going overseas, Poppa said, are most often factory jobs at relatively low wages. Workers are available at \$1.50 per hour in Malaysia, he said. "Would we want to have that job in the U.S.?" Poppa asked. "I don't think so. We'd rather have a higher paid job at \$8 an hour." Back at home, Poppa noted, Storage Tek is still creating jobs in Colorado, though many of

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IN BRIEF

One ringy-dingy

Last week was one of busy signals from AT&T. In a move to help shore up U.S. semiconductor strength, the communications mammoth partnered with **Olin Corp.** and, in a separate agreement, with chip-maker consortium **Sematech**. Under the former pact, Olin will manufacture and market an AT&T-developed version of the chemical compound "resist", which is needed for semiconductor manufacture and is currently the object of a \$225 million worldwide market, according to AT&T. AT&T's "ultraviolet resist," the company said, can produce chips with lines "roughly 1/400th the diameter of a human hair."

Two ringy-dingies

In another move, AT&T reorganized its **AT&T Credit Corp.** into a new subsidiary, **AT&T Capital Corp.**, which will operate as a family of five targeted business units. The divisions — AT&T Credit Corp., AT&T Commercial Finance Corp., AT&T Capital Holdings, Eaton Financial Corp. and Encore International, Inc. — will add up to a full-service finance and equipment leasing company, employing some 1,200 people throughout the U.S. and Canada. The new structure should be in place by the end of this month, according to AT&T.

At long last, love

After months of jockeying, tape drive players **Archive Corp.** and **Cipher Data Products, Inc.** announced last week a definitive merger agreement. Archive, which said that approximately 85% of Cipher's outstanding shares had already been tendered pursuant to its \$7.50-per-share tender offer, will boost its offering price to \$8.25. Cipher's board, said the long-time Archive competitor and soon-to-be Archive acquiree, will unanimously recommend that its shareholders just say yes. To ease the way, Cipher's board said it would exempt the transaction from outstanding "poison pill" shareholders' provisions as well as from the business combination statute in Delaware.

At long last, divorce

A year after the "merger of equals" between **Morino Associates, Inc.** and **Duquesne Systems, Inc.** that created systems software vendor **Legent Corp.**, former Duquesne chairman **Glen Chatfield** resigned from the company last week. Chatfield served as Legent's chief executive officer until November 1989, when he and then-Chairman **Mario Morino** both ceded their titles to current Chairman and CEO **Joe M. Henson**.

EXECUTIVE CORNER

Ex-IBM exec joins Cap Gemini



Stephen A. Carns, who for the past five years has headed IBM's Professional Services division, has joined **Cap Gemini America** as the new president of the New York-based information technology services company. Cap Gemini America Chairman **Robert Sywolski**, to whom Carns, 44, will report, cited Carns' 21 years with IBM as making him particularly suitable to head the company's expansion into systems integration.

Louise Kirkbride, former vice-presi-

dent of marketing at customer-support software start-up **Answer Computer, Inc.**, is now president of the Sunnyvale, Calif., firm. Former Chief Executive Officer **Warren Prince** becomes Answer's chairman, charged with setting the company's strategic direction.



Bell & Howell Co. has named **William J. White** as chairman, president and CEO. White, former president of **Whites-tar Graphics, Inc.**, will replace Chief Financial Officer **Nils Johansson**, who has

been serving as interim chairman of the Skokie, Ill.-based information services and publishing company since the resignation last September of CEO **Gerald E. Schultz**.

Tracy R. Licklider, 42, most recently a group vice-president for personal systems at Waltham, Mass.-based **AI Corp.**, has been elected president of **The Boston Computer Society**, which claims to be the world's largest personal computer user organization. His predecessor, **Jonathan Rotenberg**, 26, who founded the organization 13 years ago and oversaw its growth to an organization with 50 individual user group members, a \$2.2 million annual budget and 40 publications, was elected chairman of the board.

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Braving the new European frontier? Beware

ANALYSIS

BY ALAN J. RYAN
CW STAFF

BEDFORD HILLS, N.Y. — The Boy Scout motto, "Be Prepared," could have been written for companies planning to take their first tentative steps into that wilderness better known as the 1992 European Community (EC).

Unmarked though its business and trade borders may be, the Europe that will emerge in 22 months will still have many soft barriers for businesses to deal with, according to speakers at a meeting

hosted by The Diebold Group, Inc. earlier this month.

Among the key issues expected to impact U.S.-based high-tech and other U.S. companies planning to do business in the EC are the following:

- Jobs that are created in many of the EC countries cannot simply be eliminated if the company's plans do not work out. Layoffs are unheard-of in some countries, according to Gerhard Adler, a consultant with Diebold Deutschland GmbH in Frankfurt, West Germany. Whether or not the company fails, "You have to more or less pay them until they die," he said.
- The EC's growth plan is likely to include

countries in which telecommunications are still primitive — Eastern Bloc countries, for example. In many such places, the lack of computing power means low unemployment. The advent of advanced technology will bring both the fear and, in some cases, the reality of job loss.

- Cultural differences between countries will not suddenly evaporate on Jan. 1, 1992. For instance, national holidays vary from country to country, said Fritz Reinhard Muller, managing director of Diebold Deutschland. "The problems lie in practical use, not in technical infrastructures," he said.
- Legal systems and business cultures will

continue to differ from country to country.

- The EC is striving for a balance of global intellectual property rights, according to Christopher Wilkinson, a senior EC official responsible for the area's technology concerns. However, U.S. companies pushing for strong rights in Europe may wind up creating tension and therefore losing the cooperation of some member countries. "The EC is not interested in a U.S./EC relationship that is limited to a few contentious policies," Wilkinson said. Instead, its intent is to strengthen both European and U.S. information technologies, he added.

- Language barriers will make doing business in Europe more costly for U.S. firms.

- U.S. companies and the EC will have to work together to work out an international approach to technology that will include the Japanese, Wilkinson said.

- There are "local heroes" that will create challenges for hardware and software vendor companies attempting to expand into some areas in which local companies dominate, Adler said. For instance, he said, Groupe Bull has 30% of the market share in France, but its market share elsewhere is less than 5%.

All is not grim for U.S. computer vendors, however. "Focus on areas where Europeans lack experience," Adler suggested. For U.S. vendors, he said, many opportunities lie in the areas of expert systems, speech recognition, supercomputing, microprocessors and user interfaces. Other areas in which U.S. firms can have impact, he said, are computer reservation systems for airlines, transcontinental vehicle fleet dispatching, satellite and microwave communications, network management, database services, electronic selling, credit-card verification, security and medical services.

For large firms with operations in Europe, Muller outlined challenges that seem to be the same ones they face at home: whether to centralize, decentralize or localize IS operations as well as sales operations.

Nexgen deal confirmed

Michael Swavely, president of Compaq Computer Corp., recently confirmed the company's investment in Nexgen Microsystems, a San Jose, Calif.-based chip manufacturer.

Swavely refused to say how much money Compaq had invested. However, he said, the investment was not made to woo a second chip manufacturer. Swavely said that Compaq's interest in Nexgen is to contribute to the research and development of "some very significant chip technology."

"We have made a small technical investment in Nexgen because we believe [it] is working on technologies that could make an impact on the industry sometime in the future," he added.

Nexgen is developing a superscalar technology that is designed to deliver higher raw performance than existing reduced instruction set computing processors, while maintaining compatibility with MS-DOS, OS/2 and Unix applications, according to Compaq.

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Japan council urges breakup of NTT

BY LORI VALIGRA
IDG NEWS SERVICE

TOKYO — Time is running out on Nippon Telegraph and Telephone Corp.'s (NTT) five-year trial period as a privatized company. A governmental advisory council report issued early this

month recommended that the market-dominant firm be broken into three smaller companies to further stimulate competition.

The report was released this month by the Telecommunications Council, an advisory group to the Ministry of Posts and Telecommunications, which ad-

ministers Japan's telecommunications industry. The council recommended breaking NTT into a long-distance company, a local-service operator and a mobile communications firm, since the latter is not connected with NTT's established circuits.

NTT's continued virtual mo-

nopoly of the telecommunications market is hampering fair competition and efficient management of the mammoth company, the council said.

The group recommended splitting off long-distance service in 1995, when NTT is scheduled to complete digitalization of its nationwide network. The other two businesses should be spun off over the next two

years, the report recommended. The new local-service company would inherit NTT's extensive research and development facilities, which parallel those of AT&T Bell Laboratories. Because that market is currently the most lucrative — as much as 80% of the total, by several industry estimates — it should remain regulated by the government, while the other two should be freed from the law governing NTT, the council said.

Daini-Denden, Inc., Japan Telecom Co. and Teleway Japan Corp., competing firms that still must use NTT circuits in major cities, each issued a positive statement in reaction to the NTT breakup proposal.

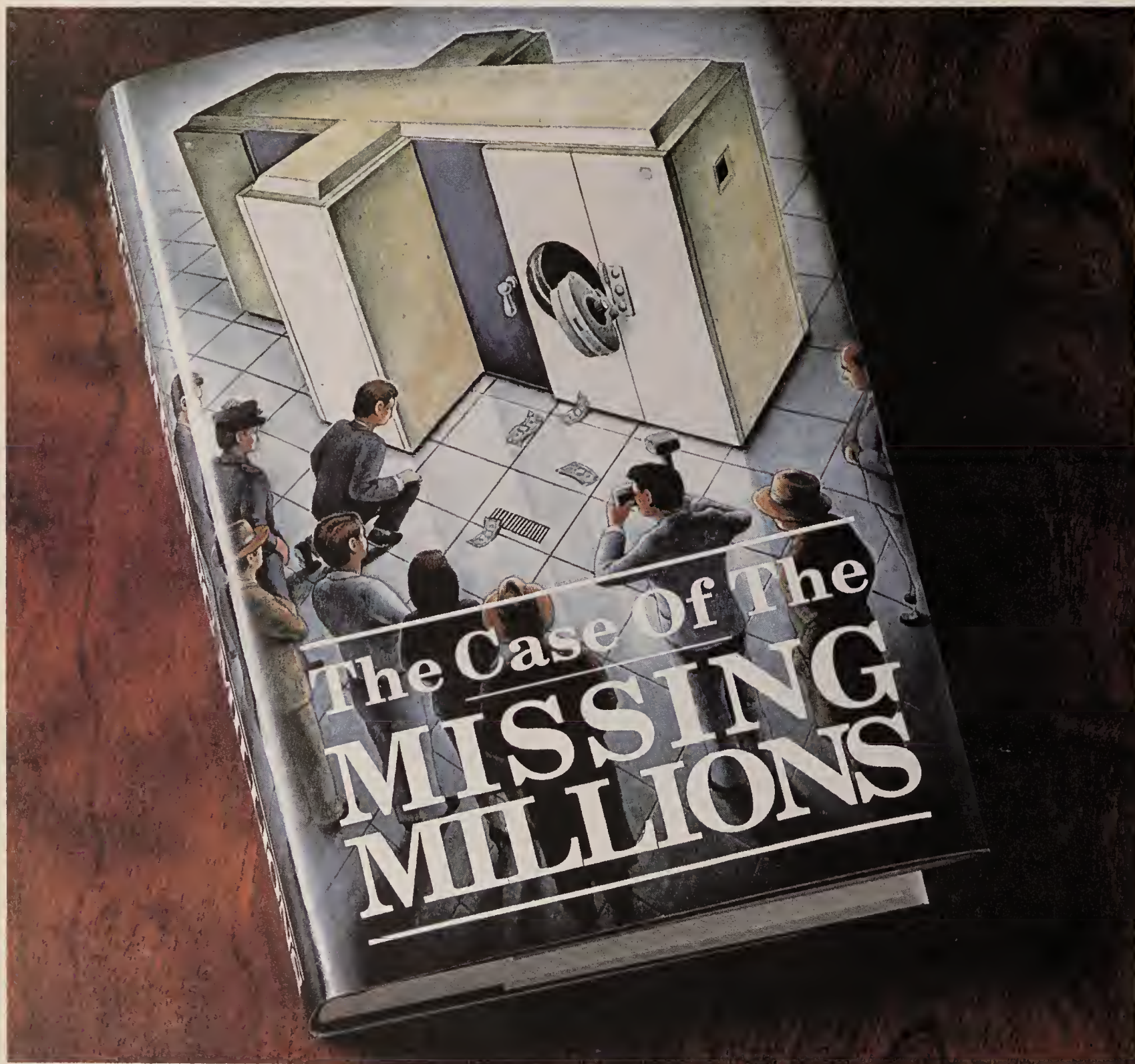
While competitors want a smaller NTT to contend with, NTT subcontractors want to deal with only one NTT, according to an industry analyst. He said NTT is one of the largest purchasers of telecommunications goods in the world, so a breakup would not necessarily benefit foreign firms. "Suppliers would rather sell to one NTT than several little NTTs," he said.

The recommendation drew immediate criticism from a number of corners, including the Japan Socialist Party, one of the stronger opposition parties to the ruling Liberal Democratic Party, which supports Zentsu (the Japan Telecommunications Workers' Union), NTT's labor union.

The opposition camp also includes the powerful Federation of Economic Organizations, which has asked for a three-year delay in making a decision, the Economic Planning Agency and the Ministry of International Trade and Industry, which both oppose any rash moves on the matter. The issue is complicated by long-standing rivalries among Japan's key technology ministries and the weakness of the Liberal Democratic Party in the parliament, which reportedly may decide the company's fate as early as the end of this month.

NTT President Haruo Yamaguchi, who has been battling rumors of the split proposal since late last year when the council issued its preliminary report, said: "In the age of increasing globalization of telecommunications networks, Japan is the only country that is actually considering division of its network into three parts. That separation is not the appropriate alternative."

He added that separating NTT into one intracity and one intercity company would mean a substantial breakup of the network. "A breakup would preclude the possibility of developing services that range over both inter- and intracity networks," he said in a prepared statement. "The U.S., for example, is now having difficulties providing nationwide Integrated Services Digital Network services."



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COMPUTER CAREERS

Taking good care of patients

Health care providers are catching on to critical applications and CIOs

BY ALICE BREDIN
SPECIAL TO CW

Governments, employers and individuals are unhappy with the high cost of health care, and hospitals, nursing homes and other institutions that deliver the care are caught in the squeeze.

In response, the government is going to require health care providers to improve their record-keeping. The regulators want the institutions to track costs more closely and improve the quality of care.

A consequence of all the pressures is a drive in the health care industry to develop patient care systems. At the strategic level, meanwhile, institutions are gradually adopting the concept of the chief information officer.

Patient care systems link terminals in doctors' offices, nursing stations, laboratories, pharmacy departments and other areas, allowing staff members to communicate without paper. A doctor, for example, could use one to enter a prescription and send it directly to the pharmacy rather than write it out for a nurse to fill.

Hospital spending on patient care systems is expected to grow 14% per year through 1993, according to Sheldon Dor-

enfest & Associates Ltd., a consulting firm in Northbrook, Ill. In contrast, spending on patient accounting systems, which most institutions already possess, is expected to grow 2% per year.

There are several additional factors driving the growth in patient care systems. One is falling technology costs; another is the fact that newly graduated nurses, technicians and other staff members expect to work with a terminal or personal computer, says Donald A. Bressler, vice-president for management and information services at Montefiore Medical Center in New York.

In addition, hospitals are grappling with a shortage of nurses, who spend nearly 40% of their time keeping records, says Warren Demurjian, a spokesman for Spectrum Healthcare Solutions in Hauppauge, N.Y. "If you can reduce that percentage, nurses can provide more care," Demurjian says.

In health care, the IS people in greatest demand are the ones who serve as liaisons between medical practitioners and programmers in the development of patient care systems, says Gail Marsh, director of quality and resource management at Ohio State University Hospitals and Clinics in Columbus, Ohio.

Over the long term, the need

will be for IS people who update the systems, according to Richard Covert, associate director of the Health Care Information & Management Systems Society, a unit of the American Hospi-

ranking from hospital programs to specialized master's degrees.

Hospitals generally train IS people in the management of patient care systems, says Nancy Miller, a consultant at executive recruiting company Heidrick and Struggles, Inc. "The area is so new, just about all hospitals have to pick up the cost."

Health care providers generally pay somewhat lower salaries

In 1988, 7% of hospitals and similar health care organizations employed a CIO, while 13% of them have one this year, according to a study by Heidrick and Struggles.

The educational system, however, is inhibiting growth of strategic information systems planning in health care, according to Lee Hilling, managing partner for Heidrick and Struggles' health care practice in Boston. Schools that offer master's degrees in health care administration are just starting to provide instruction in the management of information technology, he says.

In addition to specialized education, interpersonal skills are important in working with patient care systems. Managers look for the ability to gather, extract and report information, so most jobs call for people who are good at listening and communicating, Miller says.

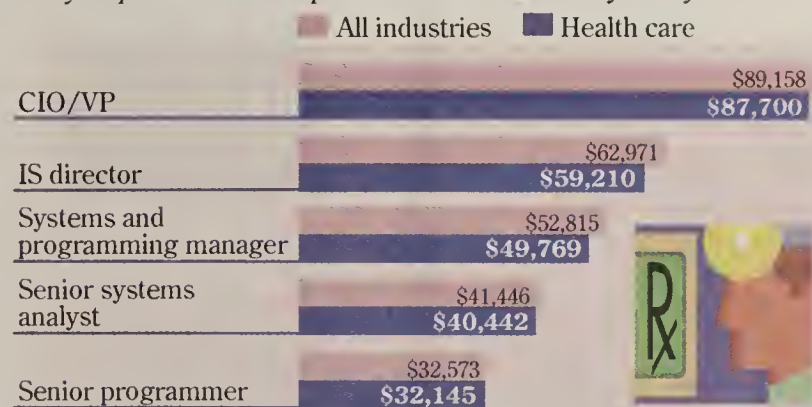
The IS people also need to help educate hospital executives regarding the limits and potentials of technology.

Finally, they must make users of the new technology comfortable with it, a process that calls for the ability to manage change. When a new system is being installed, it's important to be able to identify which concerns of users justify attention, Miller says. "You could go off to solve a problem that is really just a red herring for a person who is uncomfortable with change."

Bredin is a free-lance writer based in New York.

Not for profit

The health care industry delivers below-average total compensation for nearly all positions in Computerworld's annual salary survey



CW Chart: Doreen Dahle
Illustration: David Flaherty

tal Association.

These individuals, who might expand systems or adjust them for changes such as the adoption of new drugs, will tend to be "dual occupation" people who understand medicine and information systems, Covert says.

Generally, IS people working with health care systems hold an undergraduate degree in a field related to medicine, such as biology, chemistry or nursing. They might possess advanced training

for IS people than do organizations in other industries, according to *Computerworld's* annual salary survey (see chart). However, consultants say the gap should narrow as health care institutions put more emphasis on information technology.

As health care organizations invest in systems, they are trying to adopt a more strategic approach to the way in which they deploy them, which has led some institutions to install a CIO.

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MINIMUM QUALIFICATIONS: A Bachelor's degree in Computer Science or related field, and seven years of progressively responsible experience with at least five years in a managerial capacity.

RESPONSIBILITIES: This position is responsible for the planning, organizing and directing of the Caldwell Data Center and providing computer support for the Department.

Submit a completed State of Florida Employment Application or a resume by April 15, 1990 to: Florida Department of Labor and Employment Security, Division of Administrative Services, 2590 Executive Center Circle, 205 Berkeley Building, Tallahassee, Florida 32301-2161.

Equal Opportunity Employer, Affirmative Action Employer.

SENIOR LEVEL ANALYSTS/PROGRAMMERS TELON/DB2

Are you looking for a challenging position using new technology to maximize your technical skills?

ARMS is currently seeking full-time computer professionals with a minimum of 4 years of technical experience in an OS/MVS IBM environment with at least 1 year experience utilizing TELON and/or DB2.

We are seeking a development team who will be working with state-of-the-art prototyping techniques in developing business applications in TELON and DB2. This team will be responsible for the full software development cycle, from requirements analysis through implementation.

ARMS, Incorporated is a highly respected professional services organization that provides over 200 technical resources to clients throughout the MidAtlantic region. For over twenty years, we have established long term partnerships with small and large clients by providing resources who demand challenging opportunities and possess the highest level of professional service.

We offer excellent corporate benefits, including medical, life and dental insurance as well as short and long term disability insurance, 24 paid days off per year, a 401 (k) plan, tuition reimbursement, a company car program, a comprehensive relocation plan and other progressive benefits. We will relocate!

Respond to: **ARMS, INC., Carol Astrom, Recruiter, 300 Delaware Avenue, Suite 1014, Wilmington, DE 19801. (302) 888-7777. (302) 888-7775 (fax).**



TWA

DATA PROCESSING CAREER OPPORTUNITIES

Communications Specialist

Will design, plan, coordinate implementation of SNA communications and local area networks; develop plans for modernization and integration of corporate data networks and system components. Knowledge of IBM hardware and software system components, their relationships, dependencies, and communications protocols is required.

Information Engineering Specialist

This individual will assist in the implementation of information engineering (IE) methodology and the information engineering facility (IEF) for use in all phases of TWA systems development life-cycle. Includes developing the enhancements needed to the IE methodology along with integrating that methodology with JAD techniques for use in the TWA environment. Assist in the development and refinement of the IEF and methodology standards. provide methodology and IEF tool consultation to TWA's applications development personnel as needed.

Minimum 5 years experience and structured systems analysis and design. Includes taking a development project from requirements through implementation. Background in programming language COBOL, experience with DB2 in an on-line environment, and PC's is required. Experience with the IEF very desirable.

IMS/DB2 Database Administrators

Knowledge of IMS and MVS JCL required. Experience in Physical DB2/IMS database design as it relates to Entity Relationship Modeling. Knowledge of information engineering techniques and CASE tools helpful. IMS DC is implementation vehicle for most IMS and DB2.

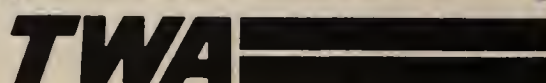
TWA's Data Processing Center is located in Kansas City, Missouri, The City of Fountains, ranked high as one of the most livable cities, 18th per capita income and 12th for educational achievement. Housing costs in Kansas City compare very favorably to other major metropolitan areas.

TWA offers excellent salary and benefits including worldwide travel privileges. Interested and qualified candidates are invited to submit their resume and salary requirements to:

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P.O. Box 20007
Kansas City, MO 64195**

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Equal Opportunity Employer M/F/H/V



HELP WANTED: Project System Software Engineer. Please send resume within 30 days of publication date to: Employment Security Department, ES Division, ATT: Job #188803, Olympia, Washington 98504. **JOB DESCRIPTION:** Designs, implements and tests complex and high level systems and software for microcomputers. Assumes project responsibility over other engineers to design networking software for OS/2, UNIX/XENIX, and state-of-the-art (80286-386 and i860) operating systems utilizing "C" and the following Assembler Series languages: 8086, 80286, 80386 and i860. Will work with Intel 286-based, 386-based and i860 microprocessors. Designs networking system software utilizing parallel processing in multiprocessing environment. Assumes major project responsibility including: 1) requirements and analysis of project specifications; 2) product design; and 3) implementation schedules. **REQUIREMENTS:** Bachelor's degree in Computer Science, Physics, Mathematics or Electrical Engineering. Two years of work experience in software design project responsibility and in design of networking system software utilizing parallel processing systems in multiprocessing environment; this must include six months of work experience utilizing OS/2 or MS-DOS and UNIX/XENIX operating systems, "C" and the following Assembler Series languages: 8086, 80286, 80386 and i860, and Intel 286-based, 386-based, and i860 microprocessors. **JOB LOCATION:** Redmond, Washington. Must have proof of legal authority to work in the United States. **SALARY:** \$64,000-\$68,000 per annum, depending on experience. 40 hours per week, flex time. EOE

IMS PL/1 SYSTEMS DESIGN ENGINEER to act as senior analyst/project leader on onboard aircraft automation systems. Conducts analysis of business systems and gathers functional requirements in order to recommend automated solutions to areas such as food and beverage catering, communications, etc. Models current industry events and essential services provided and analyzes future demand based on competition, data sources, and projection prototypes. All phases of systems analysis to be conducted using Yourdon methodology and Jackson Structured Design. Will supervise two to four programmer analysts. Applicants required to have a Bachelors degree in Math, Computers or Engineering and at least two years IMS PL/1 applications programming experience. Experience must include at least one year each with Yourdon Structured Programming and Jackson Structured Analysis. Annual salary will be \$39,000 for a 40 hour work week. Additional salary up to \$44,000 per year may be paid if education and experience warrant. Interested applicants apply at the Texas Employment Commission, Dallas, TX, or send resume to the Texas Employment Commission, Austin, TX 78778-0001, J. O. number 5518143. This advertisement was paid by an equal opportunity employer.

SYSTEMS PROGRAMMERS

Openings in Sacramento and/or San Francisco Bay Area for any of the following skills:

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Send resume
in complete confidence.

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A Fortune 500 Company, one of the nation's top fully integrated copper producers, is seeking a dynamic, achievement directed MIS professional to develop and implement a comprehensive corporate information system. This Director will have management level responsibility for systems development, software maintenance and systems operations. Will have authority for the installation, maintenance and enhancement of software systems for the entire corporation. Will have direct responsibility for procedures development and management of the programming and systems analyst staff.

We require a candidate that brings a strong 5-10 year progressive background including complex project management with outstanding leadership skills relative to a fast paced operational environment. Must be professionally aggressive with excellent communication skills. Candidate should hold a degree in Information Systems, Computer Science or related field.

We are offering the right MIS Director a chance to join a progressive, dynamic metals company with career challenges and to enjoy the attractive life style that is unique to our Southwestern location. We provide an attractive compensation package, comprehensive benefits and relocation assistance. If you meet the above requirements, please submit your resume, including salary history, to: Department 3PX58, P.O. Box 7157, Phoenix, AZ 85014.

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Build your future on our tradition of success! FoxMeyer Drug Company, a Fortune 500 company and a rapidly expanding leader in the wholesale pharmaceutical distribution industry, is one of the top 100 data processing organizations in the U.S. Our desire to be the best has created additional opportunities at our corporate headquarters located in Dallas.

WE ARE SEEKING:

- **P/C Programmer Analyst** - 3+ years experience and a degree, Pascal and/or C
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WE OFFER:

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YOUR background will be in wholesale distribution, mail order, retailing or manufacturing and include:

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- Warehousing
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If these opportunities are a challenge to you, please forward resume and salary history to:



FoxMeyer Drug Company

Human Resources - MIS Opportunities
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COMPUTING MANAGER

The Institute for Advanced Study is seeking a computer professional with hands-on experience to manage its computing operations in the School of Natural Sciences. This individual, with the assistance of two part-time support specialists, will recommend and purchase all hardware and software for the School, install and debug software, manage user accounts and train users, write grant proposals for computing equipment and maintain all electronic mail links from and to the Institute.

The preferred candidate will be degreed and have a thorough working knowledge of VAX/VMS/ULTRIX and SUN/UNIX systems as well as a progressively responsible work history which includes systems management. Prior experience working in an academic or science-oriented environment highly desirable.

The Institute for Advanced Study is a small academic institution devoted to the nurturance and support of post-graduate research. We offer a competitive salary and a strong benefits package which includes tuition assistance for children and staff. We anticipate a June 1 start date for this position. Interested candidates should send their resume with salary requirements to: Roberta Gernhardt, Institute for Advanced Study, Olden Lane, Princeton, NJ 08540. AA/EOE



THE INSTITUTE FOR ADVANCED STUDY

C O M P A Q

Why 7,100 people call Compaq home.

At Compaq, our people have taken us farther, faster than any company in history. What makes us so different? We've created a unique corporate environment — an environment that helps foster creativity and personal satisfaction. We'll give you room to run and explore your talents.

Our distinctive approach to business translates into much more than producing the most advanced computers on the market. It means personal achievement and satisfaction in a job well done. That's why 7,100 people call Compaq home.

Systems Software Development Engineers

You will evaluate, design and develop firmware, operating systems, device drivers and utility software for PC systems. A BSEE, BSCE, BSCS or equivalent and related software development experience is required. You'll also need solid 'C' and Intel Assembler programming skills and experience in one or more of the following: DOS, OS/2, UNIX, WINDOWS, and/or NetWare.

Engineering Sales Support

Our continued success has created immediate opportunities for Field Systems Engineers at our regional offices in Chicago, IL; Lake Success, NY; Costa Mesa, CA; Indianapolis, IN; and Dallas, TX; as well as our world headquarters in Houston, TX.

With your excellent presentation and communication skills, you'll provide vital support to our clients and sales staffs. Start with a BS degree in Engineering, Computer Science or a related field. Add to that a minimum of three years' experience in microsystems application and operations with expertise in micro-to-mainframe communications, multi-user systems software, multi-tasking environments, networking, or hardware for graphics.

Positions are also available in the areas of Systems Performance Measurement/Investigation and Software Development (Emphasis on Graphical User Interface).

For the above positions in Systems Engineering, please direct your resume to Dept. CW319-YA

Communications Software Analyst

You'll test and install new VINES releases in a large international network, design gateways to network applications, provide related technical support to software developers and troubleshoot complex problems in a complex environment. Start with a BSCS or related technical degree and a strong knowledge of network operating systems.

In addition, you'll need two or more years' experience programming and developing multi-user systems using 'C'. An extensive knowledge of MS-DOS is essential. Familiarity with OS/2, X.400 and X.500 messaging standards, distributed systems development in a network environment and use of Sniffer in an Ethernet environment is preferred.

Distributed Systems Development Analyst

Responsibilities include evaluating and recommending tools for developing distributed applications and providing planning and design assistance to developers of distributed applications. In addition, you will be developing training and education programs.

Qualify with a BS, MIS or related degree and a minimum of 2 years' business application development experience. Relational DBMS experience such as Ingres, Oracle, DB2 or Sybase is helpful. Knowledge of one or more networking environments such as Lan Manager, Netware or Vines is a plus. Experience developing PC-based applications using at least two of the following operating systems: DOS, OS/2, and/or UNIX is required. Client/Server application development experience is preferred.

Position also exists for a MRPII Project Leader.

For the above positions in IMS, please direct your resume to: Dept. CW319-SC.

Compaq offers competitive salaries, comprehensive benefits and an unequalled work environment. If you're interested in one of these opportunities, simply submit your resume along with the position for which you wish to be considered to: *Compaq Computer Corporation, Dept. _____, P.O. Box 692000, Houston, Texas 77269-2000.*

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COMPAQ

H O U S T O N

PROGRAMMER ANALYST

IMS, DB/DC SQL

The State Education Assistance Authority is high respected for effectively administering student educational loan programs in the Commonwealth of Virginia. To meet our complex challenges, we seek a qualified systems professional to design, develop, maintain and enhance computer systems; translate written or oral instructions into computer programs; and analyze diverse projects by defining user requirements.

You must have a 4 year college degree with major in a related field backed by 2-4 years of COBOL programming experience and strong knowledge of data processing technology.

The SEAA offers an attractive benefits program including medical, life, dental insurance, retirement plan, tuition refund, wellness and a vital role in our fast-growing organization where advancement potential and progressive management exist.

Interested applicants should submit resume (including reference job number 00392) and salary history to arrive no later than 4:30PM on Monday, April 2nd, 1990 to the State Education Assistance Authority, Personnel Dept., One Franklin Square, 411 East Franklin Street, Richmond, VA 23219 (804) 786-3930 or in VA 1-800-792-LOAN. An eoe m/f.

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We are installing a Network of 32 AS/400's communicating to 500+ remote locations. Outstanding opportunity to add your expertise to this highly visible project within the IBM Community. Responsibilities include tailoring the Operating System/400 Structure, Performance Tuning, AS/400 Networking, knowledge of APPN/APPC, and Advanced CL Programming. This project requires a six-month stay in Harrisburg, PA.

Delphi Systems is the Professional Services Division of PSC Information Services, at \$32 million and 325 employees, the 65th largest software firm in the United States. Inquire about our Philadelphia, PA, Pittsburgh, PA and Wilmington, DE opportunities also.

Kindly direct your call or resume to: Joe O'Brien, Delphi Systems, Suite 150, 190 South Warner Rd., Wayne, PA 19087. Telephone (215) 971-9550. 24-hour FAX machine (215) 971-9582. We are an equal opportunity employer m/f.



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Qualified candidates should send resumes to K. Shack, Human Resources Department.

Financial Systems Manager

Day-to-day management in this position entails the implementation and support of all financial applications including Billing, AR, AP, Materials Management, GL, Payroll, Personnel, and other related areas. This will require a high energy professional with a strong service orientation, excellent presentation skills and significant experience managing software installation projects and staff. Candidates must have 3-5 years directly related experience with the various financial departments and a Bachelor's Degree, although an MBA is preferred. MEDITECH applications experience would be a strong plus.

Healthcare Systems Analysts

Utilizing enthusiasm and effective communication skills, you will implement clinical and financial software applications, document policies and procedures, train and continue the education of user departments, and resolve end-user problems. This will require highly motivated candidates with initiative and strong quantitative, organization, and training skills. You must have a strong positive attitude with the ability to work independently as well as contribute to a team environment.

All candidates must possess 1-3 years of directly related experience and a Bachelor's Degree or equivalent. Installation project work experience desired; MEDITECH applications experience a strong plus.

Information Systems positions are open in the following areas:

- Laboratory MT (A.S.C.P.) preferred
- Nursing RN preferred
- Clinical (Ancillary)
- Financial

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DBA-Programmer/ Analyst

Guiberson Division of Dresser Industries, Inc., a leading manufacturer of oil field tools, has an excellent opportunity for a DBA-Programmer/Analyst, preferably degreed, at its Dallas plant. The primary responsibility will be as a DBA, but will also require system design and programming.

The ideal candidate will have experience in IDMS database, as well as ADS and COBOL programming languages. OS/MVS and TSO are also required; manufacturing and accounting systems would be a plus.

Join a company who cares about your success and recognizes your contributions! We offer a competitive salary and benefits package. For consideration, please submit resume and salary history to the Personnel Department, P.O. Box 1106, Dallas, TX 75221.

GUIBERSON DIVISION

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MIS OPPORTUNITIES

If you have the desire to work with the best people in the industry, we presently have the following positions available in our state-of-the-art data center. Our technical environment is Bull DPS8000, GCOS, DMIV-TP and IDS II.

SR. PROGRAMMER ANALYST

Requires 4-6 years' experience in analysis and development of systems, including 3 years' on-line COBOL programming and 2 years' data base experience.

PROGRAMMER ANALYST

Requires 2-4 years' experience in analysis and development of systems, including 3 years' on-line COBOL programming.

An excellent salary and benefits package accompanies these opportunities. For prompt consideration, please send resume and current salary information to: Human Resources, Department MIS, DREW INDUSTRIAL DIVISION, 1 Drew Plaza, Boonton, NJ 07005. Principals Only Please.



Drew Industrial Division
ASHLAND CHEMICAL INC. SUBSIDIARY OF ASHLAND OIL INC.
One Drew Plaza, Boonton, New Jersey 07005

Ashland

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MANAGER

Serve as primary consultant for Academic User Services with academic mainframe computer users; plans, directs, and supervises the programming, consulting, documentation, and educational activities regarding non-statistical applications on the academic mainframe computers.

Requires Master's degree in Computer Science, Management Information Systems, or related area and one year experience in consulting and programming OR Bachelor's degree in above areas and three years experience in consulting and programming. Prefer management experience and demonstrated supervisory skills, including the ability to define tasks, assign priorities, and monitor and evaluate staff performance; and major application packages (such as graphics, engineering, and database), and appropriate editors (such as EDT and EVE); ability to maintain a current and viable knowledge of computing technology; and teaching experience.

Salary commensurate with education and experience.

Application deadline April 13, 1990. Request application information from the Department of Personnel, 901/678-2601.

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IMI, Information Management Inc., a national data processing consulting firm, has immediate openings for professionals with the following skills:

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At B&D we offer more than just coding assignments, we offer careers! For immediate consideration, please call B&D at 1 (800) 525-2927 or send resume to: B&D, P.O. Box 1207, Apex, NC 27502, Attn: Jim Hash

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Systems Programmer Academic Computing

The Academic Computing Center on the Academic Campus of Virginia Commonwealth University has four Pyramid computer systems (9810 & 90x), running the UNIX operating system, installed as the basic servers on a local area network (LAN) spanning our urban campus.

The successful candidate for Systems Programmer must have good verbal and written communication skills. Experience programming in C, a thorough knowledge of UNIX utilities and kernel and the ability to adapt network, system, and application software for an academic environment is required. A B.S. degree in Computer Science or related discipline is required.

The state title for position 00205 is Programmer/Analyst. Salary ranges begins at \$26,745. Interested applicants should submit a state application or resume to: Human Resources Division, 1200 East Broad Street, Richmond, VA 23298-0066.

VCU is an Equal Opportunity Affirmative Action Employer. Women and minorities are encouraged to apply.

RESEARCH TRIANGLE OPPORTUNITIES

- ASSEMBLER, C, UNIX
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- DEC VAX Syst Managers
- TANDEM/TAL
- HOGAN or MSA
- LAN ANALYST
- IDMS/ADS/O or IMS
- AS 400/Syst. 38
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- ADABAS/NATURAL
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Programmer/ Analyst

Person will assist in the conversion and maintenance of Administrative Systems to a Digital Equipment Corp. (DEC) VAX series of computers. Bachelor's degree in Computer Science or directly related field and experience in DEC VAX/VMS systems is required. Work experience can be substituted for education. Programming experience in an educational setting with COBOL is highly desirable. Experience with the Oracle database product or other 4GL product is also desirable. Send letter, resume and official transcripts and three letters of reference by April 30, 1990 to: Ms. Susan Fisk, 102 Calkin Hall, SUNY Oswego, Oswego, NY 13126. Women and other protected class members are encouraged to apply.

AN AFFIRMATIVE ACTION/
EQUAL OPPORTUNITY
EMPLOYER

PROGRAMMER ANALYST II:
Create and maintain computer programs for telemarketing representatives; utilize programming abilities and expertise in specialized computer languages. Maintain database systems and data processing. Strong design/programming capability using "C" programming language. Extension knowledge of VAX/VMS Datatrieve and Relational Database. B.S. Computer Science with 2 years experience or M.S. degree. \$24,000/yr.; 40 hr./wk. Send resume to Jack Hiltzheim, Tennessee Job Service, 1295 Poplar, Memphis, TN 38104.

PROGRAMMER ANALYSTS

Our client needs up to 10 Programmer Analysts with experience in ADABAS, NATURAL, or NATURAL2. IBM Mainframe or VAX is acceptable. Four year degrees are required. Salaries range from \$30K-\$45K. SC location. Contact, **JIM BOSTIC, PHILLIPS RESOURCE GROUP, P.O. BOX 5664**, Greenville, SC 29606 or call 803/271-6350 (D), 803/292-1181 (E), or 803/271-8499 (Fax).

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DB2 OR RDB
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To help us to meet today's challenges, we are seeking qualified applicants in the following areas for our Norwich and Groton, CT facilities:

CAD/CAM/CAE/CIM SOFTWARE ENGINEERS

- CATIA CAD/CAM Trainers & Application Engineers
- Computervision Application Engineers, FORTRAN and CADD 4X Programmers
- Software Engineers for "C"/UNIX, Database, Graphics, and IBM Mainframe Applications
- Factory Automation Specialists. Respond to Drawer 447JHH.

NETWORK SERVICES

- Knowledge of Wide Area Networks and Local Area Networks
- T1 Backbone Networks
- Large-Scale Multiplexors
- SNA, TCP/IP, OFI, Netview
- Voice Communications experience a plus. Respond to Drawer 447 PJR.

BUSINESS SYSTEMS PROGRAMMER/ANALYSTS

- IBM, OS/MVS Environment
- IMS or IDMS Database experience
- COBOL, TSO/ISPF
- Applications include: Material, Quality, Manufacturing, Logistics and Financial Systems. Respond to Drawer 447JEH.

PRODUCT SOFTWARE ENGINEERS

- RealTime Robotic and Command and Control Applications
- Ada, "C", or Pascal Software Development for M680X0 Target Systems
- DOD STD 2167 and 2168 Methodologies
- "C", Bourne or Korn Shell Development
- Experience with Software Engineering Tools Software through Pictures Interlead, DSEE, Statemate, VAXset, or CCC. Respond to Drawer 447 PJR.

All positions require an appropriate Bachelor's degree and a minimum 2 years' experience.

General Dynamics offers competitive salaries, comprehensive benefits and advancement opportunities to match your performance and motivation.

To find a better fit with your career, please send your resume and salary history to the appropriate Drawer #, (ONLY THOSE WHO PROVIDE CURRENT SALARY INFORMATION WILL BE REVIEWED) to: Human Resources, General Dynamics Data Systems Division, P.O. Box 30, Yantic, CT 06389.

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As a key member of our MED/Reproductive Endocrine Unit, you will interact significantly with the Clinical Research, Laboratory, and Administrative staffs to develop and implement scientific and administrative databases. You will provide software expertise and training. Additional responsibilities include defining/refining the programming support needs of project scientists, interacting with backup support in hardware, as well as addressing network problems, with the existing systems programming support group. Unit members are well versed in the software MASS-11 (word processing) and RS/1.

To succeed, you must have a Bachelor's degree in Computer Science or equivalent, 2-5 years' experience with an emphasis on on-line database development, knowledge of INGRES relational database management system and VAX/VMS computing. Familiarity with RS/1 and its procedural language, RPL, are highly desirable, along with background in the biological sciences.

Please send resumes to: Dorothy McComb, Massachusetts General Hospital, Bartlett Hall Extension, Boston, MA 02114. Principals Only. No phone calls, please. An Equal Opportunity Employer/Affirmative Action Employer.

Massachusetts General Hospital

Network Engineer Academic Computing

Virginia Commonwealth University is seeking an individual to help support and enhance campuswide and intercampus computer network facilities. Including interfacing to regional and national networks. VCU's academic campus network is based on TCP/IP, using an Ethernet backbone made up of coaxial and fiber-optic cable, with related hardware: IP routers and routing software, bridges, terminal servers, etc. The VCU academic campus network is connected to the VCU medical campus network, IBM computer center, NSFnet and BITNET. Computing resources available to the academic community on the academic campus include two Pyramid 9810 computers, two Pyramid 90x computers, and SUN workstations, all running UNIX, and IBM 3081K, running MVS/XX, and IBM 4341, running VM, MLCROVAXes, running VMS, and hundreds of microcomputers including IBM PC's and compatibles and Macintoshes. The Network Systems Engineer is a member of the Academic Computing Center, Academic Campus. In addition to supporting the academic campus backbone network and intercampus network, the Network Engineer will assist individual academic departments in planning, installing, and supporting school/departamental sub-networks.

The applicant must have good verbal and written communication skills. Experience with data communication networking is required. A B.S. degree in Computer Science, Electrical Engineering or a related discipline is required.

The state title for position 51576 is Computer Systems Engineer. Salary range begins at \$31,959. Interested applicants should submit a state application or resume to: Human Resource Division, 1200 East Broad Street, Richmond, VA 23298-0066.

VCU is an Equal Opportunity Affirmative Action Employer. Women and minorities are encouraged to apply.

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Minimum 3 years Programmer or Analyst experience in Data Processing with life insurance software. Additional requirements include knowledge of several of the following: COBOL, COBOL II, SQL, DB2, IMS/DB, and CICS online and batch programming. Knowledge of JCL, VM, Xpediter, or InterTest desirable.

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- IDMS DBA Mgr. \$60K
- IDMS DBA, CICS \$46K
- IDMS P/A, ADS-O, CAS \$50K
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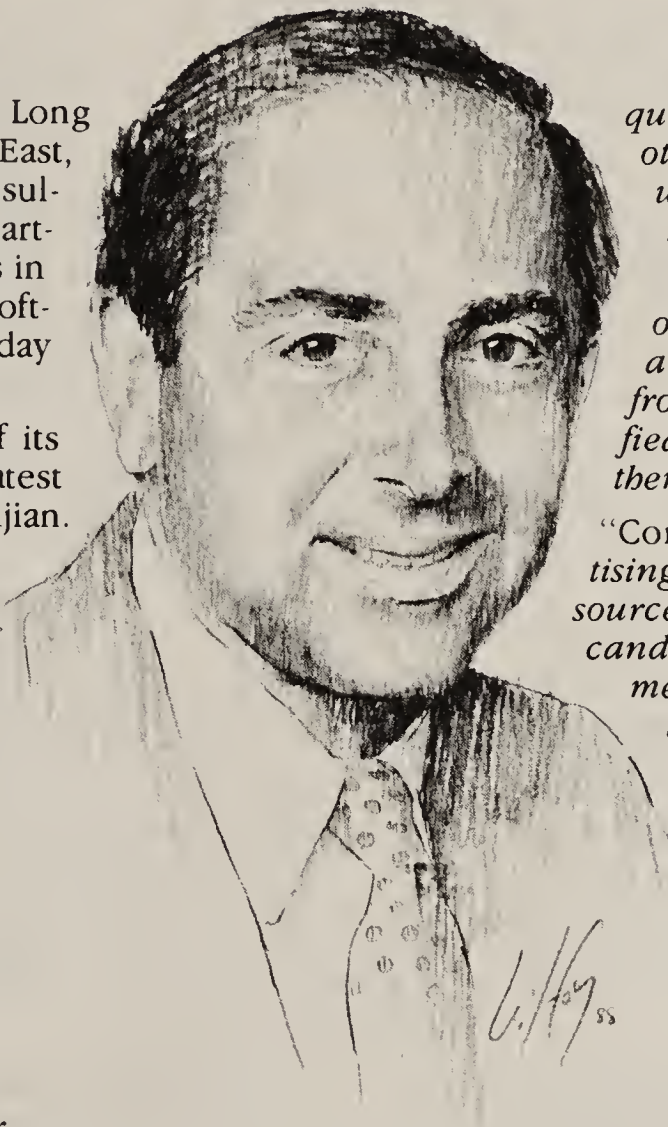
— John Tutunjian
Chairman
Cornell Computer Corp.

Cornell Computer Corp., based in Long Island, N.Y., with 15 offices in the East, West and Southwest, provides consultant services to the nation's MIS departments. The company also specializes in training seminars and courses and software maintenance on a 24-hours-a-day basis.

But Cornell considers the quality of its consultants to be the company's greatest asset, says Chairman John Tutunjian. That's why, he notes, when it comes to recruiting consultants, Cornell turns to *Computerworld's* Computer Careers pages.

“We recruit nationally. Our goal is to hire highly qualified people as a direct result of our ads. If we can hire just one consultant from an ad, we still save money over other methods, so naturally, we concentrate on print advertising.

And Computerworld is our primary vehicle. As I said, we recruit nationally and we target qualified personnel. Well, Computerworld gives us national exposure and puts us in touch with the most



qualified professionals. More than any other publication, Computerworld puts us in touch with the very people we're looking for.

“The results have been terrific. For us, one hire and the ad pays for itself — and we typically hire several people from a single ad. So we're finding qualified personnel and our ads are paying for themselves. Who could ask for more?”

“Computerworld is the future of our advertising, no question about it. No other single source has produced so many qualified candidates. Advertising in Computerworld means our message reaches key players in the computer market from coast to coast.”

Computerworld. We're helping serious employers and qualified information systems, communications and PC professionals get together in the computer community. Every week. Just ask John Tutunjian. For all the facts on how Computerworld can put you in touch with qualified personnel, call John Corrigan, Recruitment Advertising

Sales Director, at 800/343-6474 (in MA, 508/879-0700).



COMPUTERWORLD

The weekly newspaper of record for computer professionals.

375 Cochituate Road, Box 9171, Framingham, MA 01701-9171, 800/343-6474 (in MA call 508/879-0700)

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An IDG Communications Newspaper

It's easy to place your recruitment ad in Computerworld!

All the information you need is right here. Just call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700). Or, if you want, you can send us the form below via mail or to our FAX machine. You can reach our FAX at ext. 739 or 740 at either of the above numbers.

The following information will help you determine the size ad you'd like to run and when you'd like to run it.

CLOSING DATES: To reserve space, you need to call us by 5PM (all continental U.S. time zones), 6 days prior to the Monday issue date. We need your ad materials (camera-ready mechanical or copy for pub-set ad) by 5PM, 5 days prior to the weekly issue.

AD COPY: We'll typeset your ad at no extra charge. You can give us copy via phone, U.S. mail, or FAX. To typeset an ad for you, we need clean, typewritten copy. Figure about 30 words to the column inch, not including headlines. (There are seven columns on each page.)

LOGOS AND SPECIAL ARTWORK: Any logos or special artwork should be enclosed with your ad copy. For best reproduction, please send us either a stat of your logo or a clean sample on white bond paper.

COLUMN WIDTHS AND MINIMUM DEPTHS: Your ad can be one of seven different widths. There is a minimum depth requirement for each width. You can also run larger ads in half-inch increments. The chart below can serve as a reference.

NUMBER OF COLUMNS	WIDTH	MINIMUM DEPTH
1 column	1-1/4"	2"
2 columns	2-5/8"	2"
3 columns	4-1/16"	3"
4 columns	5-9/16"	4"
5 columns	6-15/16"	5"
6 columns	8-3/8"	6"
7 columns	9-3/4"	7"

RATES: Your rate will depend on the size of your ad and whether you choose to run regionally or nationally. The national rate is \$14.85 per line or \$207.90 per column inch. The regional rate (Eastern, Midwestern or Western editions) is \$10.80 per line or \$151.20 per column inch. You can run your ad in any two regions for \$13.50 per

line or \$189.00 per column inch. In all cases, you can earn volume discounts.

The minimum ad size is two column inches (1-1/4" wide by 2" deep) and costs \$415.80 if run nationally. A sample of this size appears below. You can run larger ads in half-inch increments at \$103.95 per half inch. Box numbers are available and cost \$25 per insertion (\$50 if foreign).

Programmer Analyst

This is a sample ad for Computerworld's Computer Careers section. It will help you decide what size ad you'd like to run. Remember that you can run your ad either regionally or nationally in our recruitment section and that the minimum ad size is one column (1 4/16 inches wide) by two inches deep (like this sample). This ad would cost \$415.80 in our national edition, \$302.40 in the Eastern, Midwestern, or Western edition, and \$378.00 in two regions; volume discounts apply.

SAMPLE AD SIZES AND PRICES: To assist you in planning your recruitment advertising, the following shows common ad sizes and their respective costs.

	One Region (East, Midwest or West)	Two Regions (East/West East/Midwest, Midwest/West)	National Edition
1 column x 2"	\$ 302.40	\$ 378.00	\$ 415.80
2 column x 2"	\$ 604.80	\$ 756.00	\$ 831.60
3 column x 3"	\$1,360.80	\$1,701.00	\$1,871.10
4 column x 5"	\$3,024.00	\$3,780.00	\$4,158.00
5 column x 7"	\$5,292.00	\$6,615.00	\$7,276.50

PAYMENT: If you're a first-time advertiser or if you haven't established an account with us, we need your payment in advance (or with your ad) or a purchase order number. Once you have established an account with us, we'll bill you for any ads you run as long as your payment record is good.

COMPUTER CAREERS NETWORK BUYS: You can take advantage of special rates that let you run your ad in *Computerworld* and *Computerworld's* sister newspapers at special rates. Choose from *Computerworld Focus on Integration*, *Network World*, *InfoWorld*, *Digital News* and *Federal Computer Week*. Call for details.

Computerworld Recruitment Advertising Order Form

Ad Size: _____ columns wide by _____ inches deep

Issue Date(s): _____

Name: _____

Company: _____

Address: _____

Telephone: _____

Region: ☐ East ☐ Midwest ☐ West **National:** ☐
☐ East/Midwest ☐ Midwest/West ☐ East/West

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DOCUMENTATION ANALYSTS

Exxon Production Research Company (EPR) is one of the pioneers in oil exploration and production research and we are among the largest industry research facilities in the world. New projects and planned expansion of our Communications and Computer Sciences Division have created need for highly qualified Documentation Analysts.

Candidates must be able to work closely with development groups and design and produce user-oriented application documentation, context sensitive help, tutorials and training courseware for sophisticated scientific applications. Excellent oral and written communication skills required along with good interpersonal skills and an ability to act independently. BS degree in Technical Communication, Computer Science or Engineering preferred.

Experience: Three or more years experience in a similar position and familiarity with using computers running either IBM's MVS/XA or UNIX Operating Systems, MS-DOS a plus. Good basic understanding of mathematics, physics, engineering or earth science concepts a distinct plus.

Interested candidates should send resumes and salary histories to: Exxon Production Research Co., Professional Employment, Dept. E300, P.O. Box 2189, Houston, TX 77252-2189.

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Along with wide use of personal computers, we're operating one IBM 3090-300, one IBM 3090-200, and one Amdahl 5890-300. The CICS on line environment has been growing at the rate of 40% per year. Recently, we have expanded to a new Data Center. We're operating under MVS XA and VM CMS utilizing an SNA SDLC network consisting of over 3,000 terminals and printers. Our programming languages are COBOL, SQL and DATACOM's IDEAL. We have adopted DB-2 as our standard for new application development and are aggressively expanding our use of PC based and mainframe-based CASE tools.

We have recently completed a large strategic planning study and have a significant backlog of technical and application development projects. We are currently seeking the following:

APPLICATIONS DEVELOPMENT Programmers

Positions require 4+ years of structured coding experience. Highly desired experience would include COBOL, CICS, DB2 and DATACOM. A four-year degree is preferred.

Systems Analysts

Positions require 4+ years experience in a development environment versus a maintenance environment. Highly desired experience would include structured design techniques, data modeling experience, prototyping and Method/1 knowledge. A four-year degree is preferred.

DATA ANALYST

Position requires 4+ years experience in data administration, database administration, or systems development. At least 1-2 years experience in logical or conceptual data modeling is also required, as well as experience with CASE tools. Excellent interpersonal and communication skills are essential, and JAD facilitation skills are highly desirable. Some task or project management experience is also desirable. A four-year degree is preferred.

DATABASE ANALYST

Position requires 4+ years experience utilizing a relational database engine, preferably DB2 or DATA COM DB. Desirable experience includes formal participation in the physical DB design activity of development projects. A four-year degree is preferred.

SR. DATA COMMUNICATIONS ANALYST

Position requires 5+ years experience in data communications in a large systems SNA environment. Knowledge of PC Local Area Networks desirable. Excellent written and oral presentation skills, as well as project management and planning experience, are a must. A four-year degree is preferred.

LAN SUPPORT ANALYST

Requires 3-5 years of technical experience in personal computer support, including a minimum of 1-2 years in the design, implementation and support of Local Area Networks, preferably in a LAN-to-LAN or wide-area connectivity environment. Banyan network operating system experience strongly desired. Candidates must possess strong verbal and written communication and client consulting skills. A four-year degree is preferred.

SR. INFORMATION CENTER ANALYST

Requires 5+ years of technical experience in supporting PC software and hardware products such as spreadsheets, databases, and communication. Experience in the support of Local Area Networks, preferably with the Banyan operating system, is strongly desired. Excellent client consulting and project management skills and strong verbal and written communication skills are a must. A four-year degree is preferred.

The quality of life in the beautiful Carolinas is one on which to boast. We offer a mild but seasonal climate, a moderate cost-of-living, excellent schools and universities, and a myriad of cultural and recreational activities. With CP&L located in the capital city of Raleigh, the mountains and seashore are just a few hours away.

CP&L offers competitive salaries, excellent benefits, and opportunities to advance. If you're interested in becoming part of our important team of professionals, send resume with salary requirements to: **Randy Millwood, Senior Recruitment Representative, Dept. CW31990, CAROLINA POWER & LIGHT COMPANY, P.O. Box 1551, Raleigh, NC 27602.** An Equal Opportunity/Affirmative Action Employer.

CP&L

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DATABASE PROGRAMMER/ CONSULTANT

UW-Madison Academic Computing Center (MACC) is currently seeking an individual to fill a full-time position in the Database Group. Duties include: consulting and contract programming to faculty and staff for academic applications on both mainframe and micro DBMS; consulting in the selection of database software, design and use DBMS; teaching short courses; maintenance of the MACC billing system (INGRES). Qualifications include: 1 year of experience with a relational DBMS, preferably INGRES; programming experience in at least one high-level language, preferably C; good interpersonal skills; bachelor's degree, preferably in computer science or a related field. Salary range is \$23,185-\$35,000 annually. To apply, send a cover letter and resume detailing your experience in the above mentioned areas and your salary history to: MACC Personnel Office - DB, 1210 W. Dayton Street, Madison, WI 53706 or fax your materials to 608-262-4679. Deadline for receipt of materials is March 28, 1990.

ANTHONY'S

Programmer/Analyst S/38, AS400

Join a retail organization of 200+ stores with 60 years of success. The MIS department in Oklahoma City is currently installing Point of Sale and completing new systems on AS400. Successful candidates will possess S/38, AS400 experience, Cobol language and retail knowledge.

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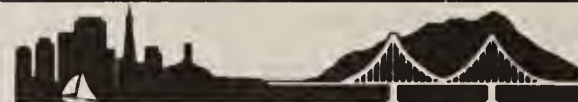
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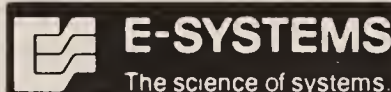
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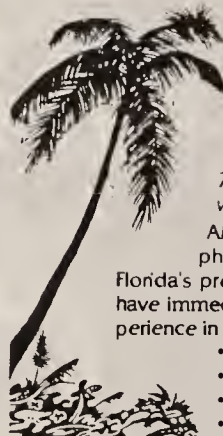
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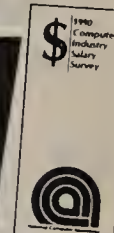
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Holding the tax man at bay

Deductions for home PCs can keep Uncle Sam a more distant relative

BY DAN DIBARTOLOMEO
SPECIAL TO CW

The legal right of a taxpayer to decrease the amount of... his taxes, or altogether avoid them, by means which the law permits cannot be doubted."

U.S. Supreme Court (Gregory v. Helvering 293, U.S. 465)

If you are one of the millions of Americans who have a home computer and use it at least in part for business, you could be missing out on tax breaks. The expenses you rack up using the computer in the course of your work can be tax-deductible.

Most people fall into one of three broad categories when it comes to using a home PC for business. The first group consists of people who have full-time jobs and use the computer to do extra work at home.

For these individuals, there are two key requirements for tax deductions. First, the computer must be a condition of employment. This stipulation means, in short, that your employment depends on your ability to do work away from the office.

The second requirement is that you use your home comput-

er for the convenience of your employer and not for your own convenience. When this question comes up in a tax audit, it can be quite helpful to have a letter from your employer explaining why you need a home computer to perform your duties properly.

The second category of home computer user includes people who are self-employed and who maintain an office at home. In general, the Internal Revenue Service is very tough on home office deductions. To get one, you must prove that your home office is used just for business and does not do double duty as part of your living quarters.

The best response to this requirement is to keep the office and your work as separate as possible from your living space and personal activities. If, for example, you use CompuServe or another dial-up service, have two identification numbers — one for business use and one for personal calls.

Another group of people who are entitled to tax deductions for home computer expenses are investors who use their PCs to analyze investments or keep records of them. These expenses include not only the costs of

hardware and software but also of quotation systems and dial-up charges for services such as Dow Jones News Retrieval.

There are limits to the deductibility of investment expenses related to the amount of your investment earnings and other income. Consult a tax adviser before dropping a bundle on big-ticket items if you expect to take advantage of deductions in this area. Even if you don't use your home comput-

er exclusively for business, you may still be entitled to tax deductions. Home computers fall into what is called Section 179 property under the Internal Revenue Code.

This classification means you can take advantage of deductions if more than 50% of the time you use the computer is devoted to business. If so, you can deduct the entire cost in the year of purchase or apply accelerated depreciation over several years.

If less than 50% of your PC use is for business activities, you can still take a more limited deduction; you can use straight-line depreciation of expenses in proportion to the percentage of time the computer is used for business. If you use your computer

for business 25% of the time, then 25% of its value becomes eligible for deductions.

In either of the situations covered by Section 179, be prepared to prove what proportion of the time you used your home computer for business by keeping a detailed log. Disk management utilities can automatically

purchased items if more than 40% of the new property is placed into service during the final quarter of the year.

Regardless of your marginal tax bracket or the intensity of your computer use, you are entitled to take every legal deduction if you have the records to back up your claims. To paraphrase

EVEN IF you don't use your home computer exclusively for business, you may still be entitled to tax deductions.

generate one by tracking how much you use each application.

There is a \$10,000 annual limit on deductions for Section 179 property.

The costs of hardware peripherals can be treated in the same way as the basic computer.

The terms for deducting costs of a home computer generally apply to the costs of software as well. You can deduct them in the year of purchase or amortize them over several years.

You can also take deductions for the costs of such services as computer repairs, insurance and telephone calls for dial-up services, which are all deductible in the year they are incurred.

There is one additional caveat to consider: The latest tax rules contain something called the mid-quarter convention. This stipulation applies special rules to first-year deductions on newly

another Supreme Court ruling, no American is obligated to arrange his affairs of commerce so as to best please the Treasury.

DiBartolomeo is the president of Northfield Information Services, a Boston consulting firm specializing in computerized investment systems for financial institutions.

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The BoCoEx index on used computers

Closing prices report for the week ending March 9, 1990

	Closing price	Recent high	Recent low
IBM PC Model 176	\$475	\$595	\$400
XT Model 086	\$600	\$825	\$600
XT Model 089	\$675	\$800	\$600
AT Model 099	\$1,100	\$1,600	\$1,000
AT Model 239	\$1,350	\$1,700	\$1,200
AT Model 339	\$1,500	\$1,800	\$1,500
PS/2 Model 50	\$1,850	\$2,200	\$1,700
PS/2 Model 60	\$2,425	\$2,600	\$2,400
Compaq Portable II	\$1,700	\$1,725	\$1,550
Portable III	\$2,400	\$2,500	\$1,900
Portable 286	\$1,900	\$2,000	\$1,700
Plus	\$750	\$950	\$675
Deskpro	\$900	\$1,200	\$800
Deskpro 286	\$1,525	\$1,825	\$1,300
Deskpro 386/16	\$2,500	\$2,750	\$2,475
Apple Macintosh 512	\$550	\$750	\$525
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Request for Proposal No. 1759, due Thursday, April 5, 1990 at 3:30 p.m. for the acquisition of the micro-computers, printers, and network hardware and software to establish a local area network for the Printing Department of MISSISSIPPI STATE UNIVERSITY.
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TRAINING

Tackling training's third stage

Companies need to work toward a coherent educational curriculum

BY WILLIAM SEBRELL
SPECIAL TO CW

Most companies that offer technical training to their information systems professionals are at the second stage of training development.

In the first stage, there was no structured approach to technical training. If companies sent employees to courses, they did so in a purely random fashion. Supervisors selected courses for the employees based on brochures or catalogs of public offerings from training vendors.

This early stage has given way to the second stage, which predominates today. In this new stage, companies do a much better job of managing and controlling training.

There is another stage to come. The key to this third stage is the development of sequences of courses — in other words, a curriculum. With one in place, changes in the business world can be quickly translated to changes in training programs. In

brief, we can train the right people in the right material at the right time.

The approach to the third stage appears deceptively simple. Unfortunately, it is much easier to describe than to accomplish. First, let's look at the gains realized in the second stage, as well as the shortcomings.

In the second stage, many companies have technical training managers in place. For standard courses — those for older technologies or issues specific to the organization — they hire staff instructors to hold regularly scheduled classes. For newer or more sophisticated technologies, they put vendors under contract to deliver tailored programs in-house, again according to a regular schedule. The companies produce catalogs of course offerings along with annual schedules and distribute them to all their employees.

In this stage, companies also identify prerequisites for courses,

although they rarely enforce them. If a new technology hits the corporation, virtually everyone gets introduced to it in one form or another, whether they will use it or not.

In the second stage, supervisors still decide who will attend what courses and when they will do so. The technical training manager determines training requirements by asking managers what they want in the coming year. Whether those requests are answered depends on how much money the training manager can squeeze from the IS budget.

A company in the second stage qualifies as an "organization with training." It conducts very little formal measurement of what people are learning or, more importantly, how they are applying what they know. The company does not clearly identify the skills that people should possess for a given job grade. The bottom line is that management does not know what skills

people need for a job, what skills they currently have, what to teach them or when to do it.

How does a company move to the third stage?

One of the first steps is to identify all the major job categories in IS. Then, in each category, we have to identify the skills and tasks required to do a particular job productively.

Next, we need to measure how well people in each job can actually perform the tasks that we have identified for the position. This step is one of the more difficult ones. The only sensible means of accomplishing it seems to be through some form of testing. I am not aware of any commercially available products or services that meet this need. There are aptitude tests, of course, but they don't get at the application of skills.

Next, we have to develop or buy the training material needed to close the gap between the target level of skills we have identified and people's current abilities. This step is also a considerable undertaking. At this point, we have gathered the data to present management with the costs of providing the training as well as the costs of not doing so. This capability represents a significant advance from the level most companies

are at today.

Finally, we need to organize the training we will be delivering into a workable and manageable curriculum. A related step is to look at what training people are currently getting in each job and weed out duplication of training across different job functions, along with other extraneous programs. We can then begin to move the company to the more sophisticated third stage of technical training — what I call a "trained organization."

At this stage, forecasting, planning, budgeting and delivery of training are more manageable and considerably more accurate. They are also easier to control and relate to the business needs of the corporation. Clearly, this is what we have always intended to do through developing a training curriculum.

A number of corporations are already actively pursuing this concept of training. It is not impossible, nor is it a pipe dream. Corporations planning to stay competitive in the 1990s — to improve their productivity and profitability — will have to address all of these issues.

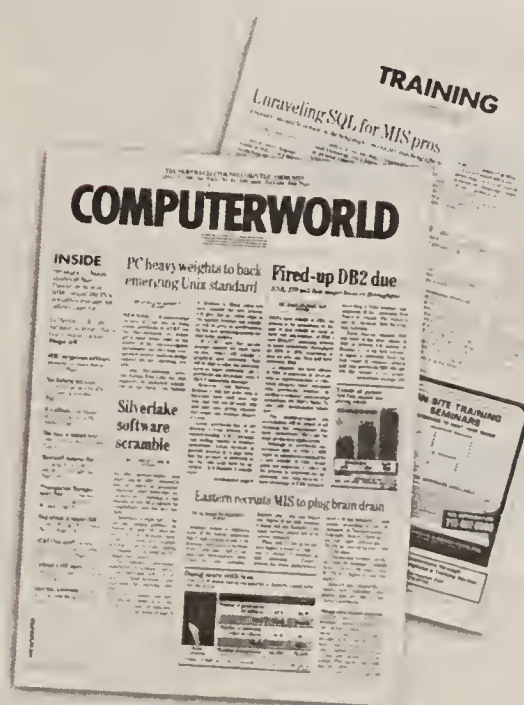
Sebrell is a vice-president at Data Base Management, Inc., a subsidiary of American Management Systems, Inc. in Manchester, Conn.



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Products & Services
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DB Expo
Ad Close: Mar. 20
- 2** **Gauging effectiveness with The Duncan Training Metric**
Executive Report:
Better manufacturability through computers
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- 9** **Training in your "backyard"**
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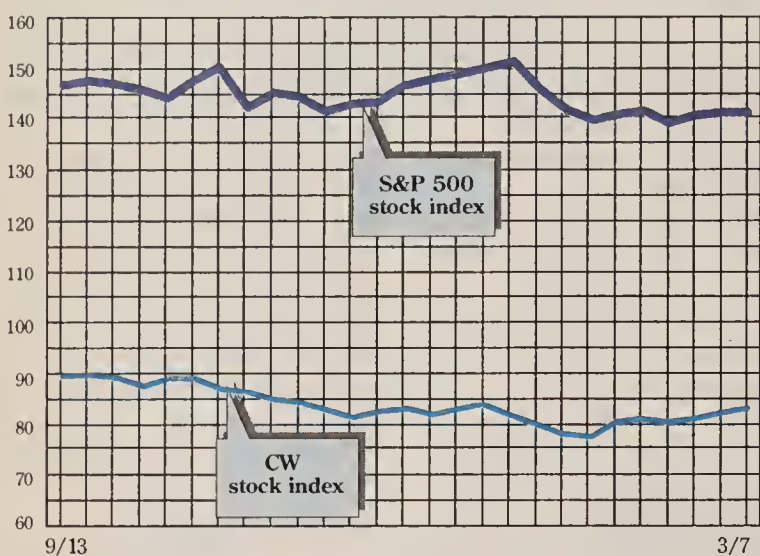
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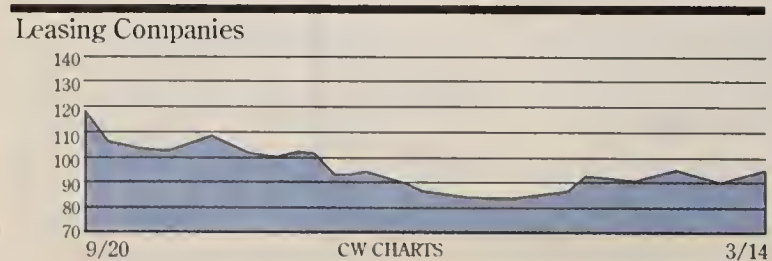
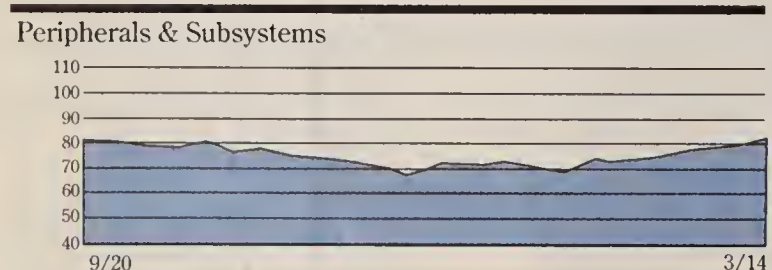
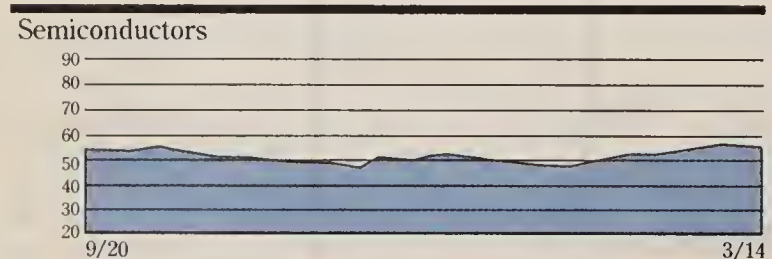
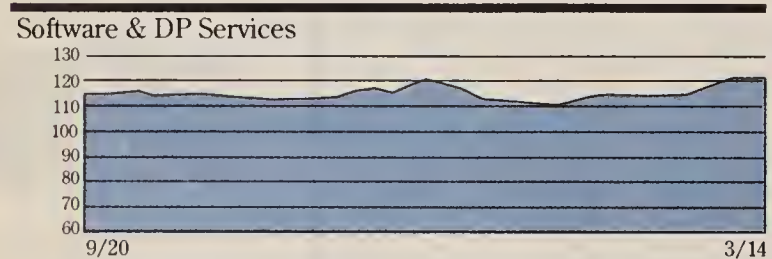
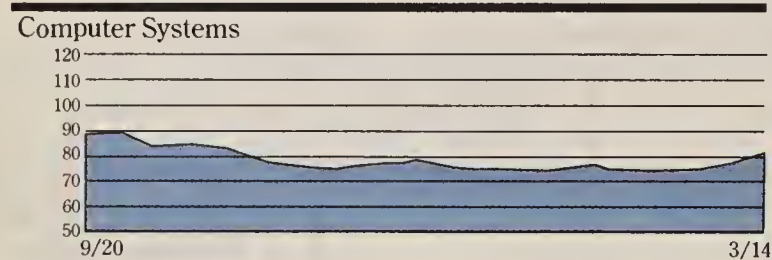
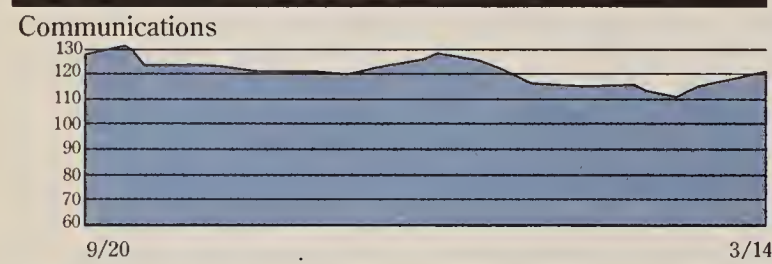
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STOCK TRADING INDEX



Indexes	Last Week	This Week
Communications	119.3	120.7
Computer Systems	78.9	81.9
Software & DP Services	120.6	120.8
Semiconductors	57.2	56.9
Peripherals & Subsystems	79.6	80.5
Leasing Companies	90.4	95.8
Composite Index	85.0	86.7
S&P 500 Index	142.2	142.2



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CLOSING PRICES WEDNESDAY, MARCH 14, 1990

EXCH	52-WEEK RANGE	PRICE CLOSE MARCH 14 1990	WEEK NET CHNGE	WEEK PCT CHNGE
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Communications and Network Services

N	AMERICAN INFO TECHS CORP	68	50	59.875	0.0	0.0
Q	ANDREW CORP	26	18	22	0.3	1.1
Q	ARTEL COMM CORP	9	3	7.5	0.0	0.0
N	AT&T	47	30	41	0.0	0.0
Q	AVANTEK INC	7	2	3.375	0.3	10.2
N	AYDIN CORP	21	14	14.875	-0.6	-4.0
N	BELL ATLANTIC CORP	114	74	90.625	-2.1	-2.3
N	BELLSOUTH CORP	59	40	52.875	-0.5	-0.9
Q	COMPRESSION LABS INC	14	4	13.375	0.5	3.9
Q	CONTEL CORP	37	24	29	0.0	0.0
Q	DATASWITCH CORP	6	2	1.875	-0.1	-6.3
Q	DIGITAL COMM ASSOC	25	17	19.75	-0.5	-2.5
Q	DYNATECH CORP	21	16	15.75	0.3	1.6
Q	FIBRONICS INTNL INC	8	4	7.75	1.1	17.0
Q	GANDALF TECHNOLOGIES	7	3	2.625	-0.1	-4.5
N	GENERAL DATA COMM INDS	7	4	3.875	-0.1	-3.1
N	GTE CORP	72	45	61.875	0.0	0.0
Q	INFOTRON SYS CORP	13	6	6.25	-0.3	-3.8
N	ITT CORP	65	51	54.25	0.3	0.5
N	M A COM INC	9	4	4.375	0.1	2.9
Q	MCI COMMUNICATIONS CORP	49	26	34.125	1.0	3.0
Q	NETWORK EQUIP TECH INC	34	19	33	2.6	8.6
Q	NETWORK SYS CORP	12	7	11.75	0.3	2.2
N	NORTHERN TELECOM LTO	26	14	25.5	0.4	1.5
Q	NOVELL INC	43	24	43.25	5.5	14.6
N	NYNEX CORP	92	68	80.375	-0.1	-0.2
N	PACIFIC TELESIS GROUP	52	34	44	-0.3	-0.6
A	PENRIL CORP	9	4	6.5	0.0	0.0
N	SCIENTIFIC ATLANTA INC	25	14	23.5	0.4	1.6
N	SOUTHWESTERN BELL CORP	65	44	55.5	-1.5	-2.6
Q	3 COM CORP	29	10	13.5	0.0	0.0
N	US WEST INC	81	60	71	0.9	1.2

Computer Systems

Q	ALLIANT COMPUTER SYS	8	3	7.125	-0.8	-9.5
Q	ALPHA MICROSYSTEMS	8	4	3.688	-0.1	-1.7
Q	ALLOS COMPUTER SYS	8	5	5.5	0.1	2.3
A	AMDAHL CORP	23	11	14.5	-0.6	-4.1
Q	APPLE COMPUTER INC	50	32	36.75	1.4	3.9
N	BOLT BERANEK & NEWMAN	10	5	6.125	0.0	0.0
N	COMPAQ COMPUTER CORP	113	67	96.375	4.1	4.5
N	COMMODORE INTNL	20	7	8.5	-0.4	-4.2
N	CONTROL DATA CORP	24	16	19	0.3	1.3
N	CRAY RESH INC	61	31	46.125	-3.5	-7.1
Q	DAISY SYS CORP	5	0	0.594	0.1	11.9
N	DATA GEN CORP	19	8	9.375	0.5	5.6
N	DATAPoint CORP	6	2	3.625	1.6	81.3
Q	DELL COMPUTER CORP	9	5	7	0.9	14.3
N	DIGITAL EQUIP CORP	114	70	77.375	2.9	3.9
N	FLOATING POINT SYS INC	4	1	1.5	0.0	0.0
N	HARRIS CORP	40	28	31.625	1.5	5.0
N	HEWLETT PACKARD CO	58	40	44	0.4	0.9
N	HONEYWELL INC	92	62	86.875	1.9	2.2
N	IBM	119	93	106.25	0.8	0.7
Q	INFORMATION INTNL INC	16	12	12.75	0.5	4.1
Q	IPL SYS INC	10	5	10	1.0	11.1
N	MAI BASIC FOUR INC	9	2	2.75	-0.1	-4.3
N	MATSUSHITA ELEC INOL LTO	186	130	131.25	-6.3	-4.5
Q	MENTOR GRAPHICS CORP	22	14	16.875	-1.4	-7.5
N	NBI INC	3	0	0.344	0.0	9.9
N	NCR CORP	72	53	68.625	-1.8	-2.5
Q	PYRAMID TECHNOLOGY	30	9	28.5	1.0	3.6
Q	SEQUENT COMP SYS INC	25	10	24.25	2.0	9.0
Q	SHARE BASE CORP	3	0	0.563	0.1	12.6
Q	SUN MICROSYSTEM INC	25	13	23.5	0.3	1.1
Q	SYMBOLICS INC	2	1	0.875	0.0	0.0
N	TANDEM COMPUTERS INC	29	15	28	0.0	0.0
N	TANDY CORP	49	32	33.875	2.0	6.3
N	ULTIMATE CORP	12	6	6.25	0.1	2.0
N	UNISYS CORP	28	12	16.625	1.6	10.8
A	WANG LABS INC	10	4	5.75	-0.3	-4.2

Software & DP Services

Q	AMERICAN MGMT SYS INC	17	11	12.75	-0.1	-1.0
Q	AMERICAN SOFTWARE INC	23	13	22.25	2.6	13.4
N	ANACOMP INC	8	3	3.625	0.3	7.4
Q	ANALYSTS INTL CORP	20	12	17	0.5	3.0
Q	ASHTON TATE	24	9	12.75	-0.6	-4.7
Q	ASK COMPUTER SYS INC	17	7	9.5	0.0	0.0
N	AUTO DATA PROCESSING	54	36	51.5	-1.8	-3.3
Q	AUTOODESK INC	49	27	46.5	-0.5	-1.1
Q	BMC SOFTWARE INC	24	10	23.625	-8.6	-26.7
N	BUSINESSLAND INC	14	7	10.625	-0.1	-1.2
Q	COGNOS INC	8	4	4.501	0.0	0.0
N	COMPUTER ASSOC INTL INC	22	11	14.25	1.3	9.6
Q	COMPUTER HORIZONS CORP	11	7	8.75	0.0	0.0
N	COMPUTER SCIENCES CORP	59	44	46	0.9	1.9
N	COMPUTER TASK GROUP INC	16	9	11.5	1.3	12.2
Q	COMSHARE INC	42	25	38.5	0.0	0.0
Q	CORPORATE SOFTWARE	16	8	10.75	0.0	0.0
N	GENERAL MTRS (CLS E)	29	21	28.25	-27.8	-49.6
Q	HOGAN SYS INC	7	4	3.75	-0.3	-6.3
Q	INFORMIX CORP	17	8	13.625	-1.1	-7.6
Q	INTELLICORP INC	7	3	6.125	0.4	6.5
Q	LEGENT CORP	32	21	30.25	2.5	9.0
Q	LOTUS DEV CORP	35	19	33	0.3	0.8
Q	MICROSOFT CORP	109	46	107.25	4.5	4.4
Q	NATIONAL DATA CORP	35	26	30.75	2.0	7.0
N	ON LINE SOFTWARE INTL INC	11	5	8.5	0.5	6.3
Q	ORACLE SYS CORP	26	11	25.625	1.8	7.3
N	PANSOPHIC SYS INC	19	12	16.875	0.5	3.1
Q	PHOENIX TECHNOLOGIES INC	18	2	2.625	-0.6	-19.2
Q	POLICY MGMT SYS CORP	38	22	33.75	-0.8	-2.2
Q	PROGRAMMING & SYS INC	22	16	18	1.0	5.9
Q	RELATIONAL TECH INC	15	5	8.75	0.4	4.5
N	REYNOLDS & REYNOLDS CO	34	19	20.5	-0.4	-1.8
Q	SAGE SOFTWARE INC	13	7	12.75	1.4	12.1
Q	SEI CORP	20	15	18.25	2.0	12.3
Q	SHARE MEO SYS CORP	19	12	13.375	0.0	0.0
Q	SOFTWARE PUBG CORP	22	10	20.875	0.6	3.1
A	STERLING SOFTWARE INC	10	5	9.25	-0.5	-5.1
Q	SUNGAR OATA SYS INC	26	13	19.75	-0.3	-1.3
Q	SYSTEMATICS INC	41	30	38.625	0.1	0.3
N	SYSTEM CENTER INC	26	18	22.5	1.1	5.3
N	SYS. SOFT INC	26	12	26.25	1.0	4.0
Q	WORDSTAR	3	1	0.75	0.0	0.0

Semiconductors

N	AOV MICRO DEVICES INC	11	7	9.125	0.1	1.4
N	ANALOG DEVICES INC	12	7	8	-0.4	-4.5
Q	ANALOGIC CORP	11	9	9.25	-0.4	-3.9
Q	CHIPS & TECHNOLOGIES INC	26	14	21	-2.0	-8.7
Q	INTEL CORP	42	23	39.25	-0.8	-1.9
Q	MICRON TECHNOLOGY INC	26	7	12.625	0.0	0.0
N	MOTOROLA INC	66	40	65.25	3.0	4.8
N	NATL SEMICONDUCTOR	9	5	7.5	0.0	0.0
N	TEXAS INSTRS INC	47	28	35.875	-0.1	-0.3
A	WESTERN DIGITAL CORP	15	6	11.625	0.9	8.1

Peripherals

Q	ALLOY COMP	3	1	1.875	0.1	7.1
N	AMINTL INC	6	3	3.375	-0.1	-3.6
Q	AST RESH INC	16	7	14.875	-0.3	-1.7
Q	AUTO TROL TECH CORP	6	2	2.375	-0.4	-13.6
Q	BANCORP INC	20	11	17.75	-0.5	-2.7
Q	CIPHER DATA PRODS INC	10	4	8.125	0.6	8.3
A	COGNITRONICS CORP	8	3	6.25	0.0	0.0
Q	CONNER PERIPHERALS	18	7	17	-0.3	-1.4
A	DATAPRODUCTS CORP	18	5	5.625	0.8	15.4
A	DATARAM CORP	13	8	12.375	0.4	3.1
N	EASTMAN KODAK CO	52	37	38.875	-1.0	-2.5
N	E M C CORP MASS	7	3	5.75	-0.4	-6.1
Q	EMULEX CORP	12	5	5.75	-0.1	-2.1
Q	EVANS & SUTHERLAND	30	17	28	0.9	3.2
Q	ICOT CORP	3	1	1.625	0.0	0.0
Q	INTERLEAF INC	10	5	6.75	0.0	0.0
Q	IOMEGA CORP	4	2	3.625	-0.3	-7.9
Q	LEE OATA CORP	4	1	1.75	0.2	12.0
Q	MASSTOR SYS CORP	4	1	1.625	0.2	13.0
Q	MAXTOR CORP	12	7	12.125	0.6	5.4
Q	MICROPOLIS CORP	8	3	5.125	-0.5	-8.9
N	MINNESOTA MNG & MFG CO	84	66	81.625	0.4	0.5
Q	PERSONAL COMP PRODUCTS INC	6	4	4.25	0.1	3.0
Q	PRINTRONIX INC	12	7	11.625	0.6	5.7
N	QMS INC	15	7	14.875	-0.1	-0.8
Q	QUANTUM CORP	17	5	12.875	-0.1	-1.0
Q	RECOGNITION EQUIP INC	13	6	6.375	-0.1	-1.9
Q	REXON INC	9	6	8.75	0.8	9.4
Q	SEAGATE TECHNOLOGY	20	9	18.125	-0.5	-2.7
Q	STORAGE TECH CORP	23	9	18.5	-1.3	-6.3
Q	TANDON CORP	2	0	1.5	0.1	4.3
Q	TEKTRONIX INC	24	13	13.5	0.4	2.9
Q	TELEVIDEO SYS INC	1	0	0.25	0.0	14.2
N	XEROX CORP	69	50	54.875	1.1	2.1

Leasing Companies

Q	AMPLICON INC	115	8	9.625	1.0	11.6
N	CAPITAL ASSOC INTNL INC	9	3	3.375	0.4	12.5
N	COMDISCO INC	34	21	26.625	1.6	6.5
Q	CONTINENTAL INFO SYS	2	0	0.313	0.0	11.4
Q	LOI CORPORATION	18	13	14.75	0.5	3.5
Q	PHOENIX AMERN INC	5	3	3.5	0.0	0.0
Q	SELECTERM INC	9	6	5.875	0.1	2.2

EXCH: N = NEW YORK; A = AMERICAN; Q = NATIONAL

Spring rolls

Week of ups and downs leaves Microsoft as lord of the highs

Some technology stocks winged their ways to higher skies last week, while others didn't get off the ground.

Microsoft Corp. and Adobe Systems, Inc. continued up, up and away, riding the trajectory that began two weeks ago when IBM announced it would ship font technology from both software firms with its computers. Microsoft set a record high on Thursday of 111, up 4½ points. Investor demand swept Adobe stock up 4 points to 41¾ by Thursday.

Novell, Inc. also soared, closing Thursday at a new 52-week high of 43¼, up 2 ½.

Hardware companies bounced around last week, as Cray Research, Inc. can testify. Cray took a 3-point dip Wednesday, then rebounded 1½ Thursday to close at 47¾, down 1½ for the week. IBM gained ½ a point to 107, while DEC lost ¾ to finish at 76¼. Sun Microsystems, Inc. stayed even at 24.

After the announcement that semiconductor sales rose slightly in February, Motorola, Inc. issues climbed to a new 52-week peak of 66¼ on Thursday, gaining 2¾. Intel Corp. did not fare as well, slipping ¾ to 40¾. Texas Instruments, Inc. also fell to 36½, losing ½ a point.

KIMS. NASH

Blue Cross rejects audit claim

BY ALAN J. RYAN
CW STAFF

BOSTON — Blue Cross and Blue Shield of Massachusetts will forge ahead with its \$200 million information systems overhaul despite a recent audit that indicated the system had been poorly planned and may not meet the company's needs.

The audit, requested by the Commonwealth of Massachusetts and conducted by consulting firm Cresap-Tillinghast, found Blue Cross Massachusetts as a whole to be lacking a strategic business plan and facing company-threatening financial woes in future years unless corrective action is taken. Blue Cross and Blue Shield of Massachusetts has 2.6 million members.

The report said the lack of a strategic business plan makes the investment in systems a risky one. To date, \$80 million has been invested in System 21, an on-line real-time claims processing system; another \$95

million is needed to complete development and \$28 million will be spent on equipment, according to Gus Gamache, senior vice-president of information services.

Gamache said the Cresap assessment of System 21 might be overly critical. "I won't say that there won't be any holes at the back end when we get to the end," of the project, he said. However, he said the Cresap auditors did not look at the functionality of the system but focused their research instead on the process used to develop the system.

Too many details

John Porter, a vice-president and principal at Cresap, said his firm was not able to consider all aspects of System's 21 future capabilities. "We weren't in a position to take all of the different functionalities [of System 21] and assess whether each one was appropriate or not," he said. The study of System 21 "should not

be considered a detailed technical analysis," he added.

Gamache said he agrees that a strategic business plan was missing for System 21, "but we covered a lot of the bases." Currently, the IS group is taking a closer look at the audit. "If we see anything that they think makes sense that we haven't considered, then we are going to do that," he said.

Porter said while the audit "found some areas of opportunity in the IS area," it was found to be a generally sound shop. Further, he said, because of rapid changes in the health care field, it would be difficult for any IS department to accurately forecast future business needs.

The Cresap study also suggested that System 21 "may still provide benefit if the project is tightly managed and focused."

Indeed, the backbone of System 21, a product called Claims Administration and Payment System, by Advanced System Applications or ASA, a division of

Policy Management Systems Corp., in Bloomingdale, Ill., is used by many other Blue Cross companies and other insurance providers throughout the country.

Felix Nadeau, senior vice-president of operations at Blue Cross Maine, said the system in place there, called Plaincare, has had the base ASA system in place since March 1987. He said he expects to have all of its customized segments in place by fall 1991, with total systems, staffing, vendor costs and other corporate expenses totaling approximately \$15.5 million.

Support from the top

Nadeau said that the project in Maine was designed solely for claims processing. The project was tightly focused and had the strong support of top management and the company's board of directors, who "felt it was critical to the survival of the company in the early 1990s." For the future, "everything we see indicates that the system will have fundamental capacity to meet our needs," Nadeau said.

The system in place at Blue

Cross Massachusetts, System 21, is much larger in scope. It was designed to handle Blue Cross' core processing functions, including enrollment and billing, in addition to claims processing. According to the Cresap audit, System 21 will play a vital role in the insurer's "retooling" program, which was designed to improve the company's overall productivity.

The process involved in the move to System 21 was not undertaken lightly, Gamache said, and there were no feasible alternatives. A steering committee of top-level managers met weekly for two years to consider all of the business requirements that could be improved by the system.

Work groups were created to go out into the various businesses within Blue Cross to assess needs. ASA "had a lot of ideas of what features needed to be put in and what we had to do, and we factored some of that in as well," Gamache said. Also, he said, a consulting firm was brought in to conduct critical success factor analysis and verify that Blue Cross was on the right track.

GAO deplores NASA tape storage conditions

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Hundreds of thousands of magnetic tapes containing the scientific data gathered by U.S. space missions "are stored under deplorable conditions," according to an audit by the U.S. General Accounting Office (GAO).

Because of poor storage conditions, valuable scientific information stored on the aging computer tapes may be lost forever, the GAO said. In some instances, the auditors found boxes of tapes stored in dusty hallways, basements and warehouses that lack the temperature and humidity controls needed for proper tape storage.

One facility stored 4,000 tapes in a sub-basement that was flooded in 1985, swamping tapes on the bottom shelves. Another facility had nearly 300,000 boxed tapes stored on pallets, strapped by steel bands that were crushing the boxes, the GAO reported.

Castaway data

The GAO charged that the National Aeronautics and Space Administration (NASA) has given far more attention to launching new space missions than to maintaining the data from previous ones. Data storage has been a low-visibility, underfunded activity, the audit said.

NASA officials sharply criti-

cized the GAO report, arguing that there is no evidence of any significant loss of scientific data and that NASA has several ongoing programs to preserve space data. John E. O'Brien, assistant deputy administrator at NASA, called the GAO report "unnecessarily harsh."

One NASA program, for example, is preserving Voyager images of Saturn and Jupiter on compact disc/read-only memory optical discs for distribution to scientists [CW, July 17, 1989].

However, the GAO said much more needs to be done to preserve the raw data from the U.S. space program, which could be used to show long-term global climate and environmental trends, for example. The auditors said that many of NASA's storage facilities have inadequate security, little or no off-site backup of tapes and no protection from fire, water, dust or heat damage.

The GAO added that the tape-handling problem will only get worse. Two of NASA's forthcoming missions, the Earth Observing System and the Hubble Space Telescope, are expected to generate volumes of data many times greater than NASA has collected over the past 30 years.

The Earth Observing System is expected to generate a trillion bits of data — equal to 700 high-density tapes — every day for at least five years, the GAO noted.

AT&T deals aces to Tandem and HP

In the midst of new commitments, AT&T assures old ones will continue

BY J. A. SAVAGE
CW STAFF

A busy AT&T said last week that it plans to marry its latest version of Unix to Tandem Computers, Inc. fault-tolerant machines and that it will build a new system that will incorporate object-oriented software from Hewlett-Packard Co.

By the end of next week, AT&T will announce a system that will use HP's New Wave software, which can be run in both DOS and Unix environments, according to Scott Perry, AT&T's vice-president of marketing support. New Wave currently runs only on top of Microsoft Corp. Windows in the DOS environment.

Putting New Wave on top of the Unix operating system raised questions among analysts about AT&T's commitment to Open Look, a graphical user interface for Unix developed by Sun Microsystems, Inc. and AT&T.

Committed to Open Look

An AT&T spokesman said that the company will continue its commitment to Open Look along with New Wave as emerging standards. "I don't think that one precludes the other," he said.

Nina Lytton, editor of the "Open Systems Advisor," said she expects Sun to position Open Look against Apple Computer, Inc.'s Macintosh and leave the MS-DOS market alone.

AT&T is the fourth company to license New Wave but the first to agree to market Tandem's Integrity S2 computer. The fault-tolerant machine currently uses AT&T's Unix System V, Release 3.1. with fault-tolerant changes to the kernel made by Tandem.

"We are working hard to bring out Release 4.0," said Perry, who would not give a date for

that operating system's availability but said it would be "one of the first things" AT&T would do.

The Integrity S2 will be the first general-purpose fault-tolerant Unix computer available from AT&T. The company sells its own custom fault-tolerant CPUs, called 3B20D, but those are for central office switching applications, Perry said.

DEC users applaud ISO's choice of Decnet protocol

BY ELISABETH HORWITT
CW STAFF

MAYNARD, Mass. — The International Standards Organization (ISO) filled in the final missing piece of standards-based internetworking last week by accepting Digital Equipment Corp.'s Decnet routing specifications as a draft proposal.

DEC's protocol, which has been the only serious candidate for the slot during the past two years, should become a full international standard in about 12 to 18 months, according to Decnet Open Systems Interconnect (OSI) marketing manager Steve Kelly.

The proposed protocol specifies how information is passed among the intermediate nodes that route transmissions across a corporatewide network, accord-

ing to Kelly.

ISO has already defined how end systems talk to routers and how end-to-end delivery of a transmission is assured and acknowledged, he added.

Users gain two advantages from the ISO's decision, Kelly said. First, they finally have a firm time frame for delivery of interconnectivity over wide-area networks, based on the OSI standard.

"Right now, all that the government OSI program specifies under 'wide-area networking' is X.25," which is a low-level packet-switched protocol, Kelly added.

DEC users in particular gain a "smooth transition from [DEC's] existing de facto standard, similar to migrating from Ethernet to [CCITT Ethernet standard] 802.3," Kelly said.

NEWS SHORTS

NSFnet reaches out to Europe

The National Science Foundation Network (NSFnet) announced a T1 link between the U.S. and Europe last week as well as a prototype T3 network that is expected to be running at 45M bit/sec. later this year. The T1 trans-Atlantic link, provided by IBM and MCI Communications Corp., runs from the supercomputer facility at Cornell University in Ithaca, N.Y., through the TAT-8 undersea fiber-optic cable to Geneva.

HP promises multiprocessing

Hewlett-Packard Co. said last week it will have three- and four-way multiprocessing capability on its high-end minicomputers, delivering 150 to 200 transaction/sec. by the end of the year. This upgrade will be the last for HP's Series 3000 Model 980, said Robert Hill, marketing manager for the HP 3000 line, which was introduced in January.

IBM pairs with First Boston

IBM and First Boston Corp. formed a new company last week to provide trading and investment management applications to the financial industry. The new firm — reported to be in the works for more than a year — was christened Seer Technologies, Inc. and will be staffed by former employees of First Boston, including Eugene Bedell, previously managing director at First Boston. Seer will market and support a First Boston-developed product known as Newarch 20000 and based on technology developed by First Boston for its own internal use. The system runs on personal computers, IBM System/88s and IBM 370 mainframes.

Codex-MCI team to consult

Codex Corp. and MCI Communications Corp. have pooled the on-line information services they provide to consultants charged with specifying networks for clients. Codex Consultingline service, which offers product, news and electronic mail access, has joined with MCI's MCI One, The Online Network Exchange, which provides technical information about MCI's offerings and E-mail. Because of the partnership, files — including surveys and databases — can reportedly be transferred by users to Codex Consultingline through MCI One.

Attachmate wins technical award

Attachmate Corp. recently won a technical excellence award at the Government Technology Conference for an application of its Now PC/Host Autoware IBM 3270 automation software, which reportedly cuts a two-hour mainframe-to-PC data transfer to four minutes. Nontechnical personnel in the State of Oregon's Accounting Division use the software to download mainframe data directly into a spreadsheet on a PC.

Minneapolis upgrades network

The city of Minneapolis began bragging last week about its new citywide distributed computer network for emergency services. Deployed late last year, the network is based on an AT&T Information Systems Network node and connects existing AT&T Starlan and personal computer networks to AT&T and Unisys Corp. hosts. The office automation system will eventually connect IBM mainframes operated by the city and the state of Minnesota. The city also unveiled what officials said is the nation's most sophisticated computer-aided dispatch system — a Unix-based setup developed in a partnership with AT&T Network Systems.

CA buys DBMS, Inc.

Computer Associates International, Inc., signaling its intention to continue supporting CA-IDMS/DB, a database acquired from Cullinet Software, Inc. last year, announced that subject to regulatory approval, it will acquire DBMS, Inc. Based in Lisle, Ill. DBMS, Inc. manufactures software for controlling, tuning, monitoring and optimizing CA-IDMS/DB. CA would not disclose the terms of the agreement.

Oracle users push for version control

BY JEAN S. BOZMAN
CW STAFF

REDWOOD CITY, Calif. — Which version of Oracle Systems Corp.'s Version 6.0 relational database management system do you have? And when did you get it?

Now that Oracle Version 6.0 is shipping in quantity — with 2,000 copies installed in the U.S. and 2,000 abroad, according to the company — many users are fretting that they do not have the most up-to-date release. Also, while Oracle is more than willing to ship users the latest release, called Version 6.0.27.8, users have to know to ask for it. If they do, the company promises they will get a free tape delivered overnight to their site.

"Users can call us at any time," Peter Tierney, senior vice-president of Oracle's products group, said last week. "They can dial in to our Online Support System, if they're paying for maintenance, and they'll see a listing of all the bugs and the fixes."

However, users from coast to coast are reporting that as Oracle's \$900 million user base has grown, communicating with the Oracle support staff has become somewhat unwieldy.

"I have never had a problem getting an update. The only problem I have is finding out whether there is an update so that I can ask for it," said David Kreines, president of the International Oracle Users Group, who manages multiple Oracle platforms at the Educational Testing Service in Princeton, N.J. "Sometimes, I find myself spinning my wheels, trying to find out if my software problem is addressed in the latest release."



Oracle's
Tierney

Version 6.0 has been shipping to users of Digital Equipment Corp. VAXs, Unix-based computers, Sun Microsystems, Inc. workstations and Hewlett-Packard Co. computers since October, although those shipments

have accelerated in recent months, Oracle said. Users with licenses for large machines, such as VAXs, are entitled to dial up Oracle's OLS for a list of software bugs and fixes. But users of IBM Personal Computers cannot access OLS because they do not pay a maintenance fee, Tierney said.

Oracle is aware of the communication problem and is trying to fix it. There has been some discussion within Oracle of going

to a quarterly update of maintenance tapes, similar to the way IBM and other large hardware vendors handle system-software changes, Tierney said. "It would make it easier for us to go on a fixed schedule."

For now, a new bulletin board service is intended to address the support problem. At the request of the International Users Group, Oracle began providing support information for public viewing on CompuServe's information service March 10. The user bulletin board and information package is called Oracle Forum and is available to any CompuServe user, Kreines said.

Industry analysts said they are unconcerned about the quality of Oracle's products but echo users' sentiments that communication with Oracle's support group may be strained by the sheer size of the installed base.

Innumerable confusion

User confusion about the current release of Version 6.0 of Oracle Systems Corp.'s Oracle stems in part from the company's complex numbering scheme.

For many years, Oracle has listed version and release numbers — followed by the number of the maintenance subrelease. The first version of Version 6 that shipped in October was 6.0.26, according to Peter Tierney, senior vice-president of Oracle's products group. That means that the previous 25 sub-releases were not considered to be of production quality. The current release number is 6.0.27.8, which indicates that a series of fixes have been applied to bugs that appeared since October.

One New York Oracle shop installed Version 6.0.27.5 without problems — only to find it was three fixes behind another shop that just received 6.0.27.8, a New York Oracle Users Group member said. The fixes are made as software bugs are discovered, Tierney said. "We don't necessarily mass-ship the fixes," he said. "A certain period of time goes by before we make it available on OLS, just to make sure it wasn't a problem unique to one user." Oracle's largest user sites, which include Deere and Co. in Moline, Ill., McDonnell Douglas Corp. in St. Louis and AT&T in Morristown, N.J., are often the ones that identify the software bugs.

JEAN S. BOZMAN

20/20 focuses on new Lotus competition

BY MAURA J. HARRINGTON
CW STAFF

Access Technology, a CompuServe, Inc. subsidiary, unveiled a version of its 20/20 spreadsheet for Digital Equipment Corp.'s Decwindows last week and proclaimed it will not back down from Lotus Development Corp.'s potential threat to what was once a virtual monopoly held by Access since its first DEC VAX-based 20/20 product was introduced in 1984.

20/20 for Decwindows is currently shipping at prices ranging from \$600 for a DEC workstation to \$16,500 for a VAX/8000. It is designed to be fully compati-

ble with DEC's Network Application Support (NAS) and uses "true X Window graphics," rather than an emulation, according to the company. The new version also includes support for DEC's Compound Document Architecture, an NAS information service; Digital Data Interchange; and Digital Tabular Interchange (DTIF) formats.

Simple swapping

DTIF allows for easy exchange of data between 20/20 and other Decwindows applications. Through DTIF, users can also read and write models and exchange data with other applications, the company said.

Access' variety of 20/20 spreadsheet products are its bread and butter, and Lotus' almost inevitable impact on the company could pose a threat down the road, said analyst Timothy McCollum, first vice-president at Dean Witter Reynolds, Inc., based in New York.

"My sense is that an overwhelming amount of the database spreadsheet market has not been tapped," McCollum said.

According to Louis Giglio, a computer software and services analyst at New York-based Bear, Stearns & Co., Lotus' open systems strategy is the major force that will help drive those untouched customers.

Newspapers take leap into high-tech chase

BY JAMES DALY
and ELLIS BOOKER
CW STAFF

Like a once-swift runner grown fat and winded, the publishing system at *The Washington Post* was having trouble getting oxygen to its extremities. Response was slowing and movement limited. With the journalistic marathon of the 1992 presidential election looming on the horizon, systems manager Ken Weiss figured it was time to get in shape — and fast.

"We were tired of being left behind technologically," Weiss said from an office only a quick walk from the White House. "So now we're instituting a 10-year technological jump in six months."

Weiss' decision to replace a decade-old Raytheon Co. editorial system with an OS/2-based network of nearly 400 IBM Personal System/2 Model 55SX personal computers is indicative of the changes blowing through the Fourth Estate.

Once the bastion of proprietary publishing systems, large metropolitan daily newspapers are increasingly installing open standard PC- and workstation-based networks and catching up with the technological advances they could once only write about.

The multitasking and windowing features of the PCs and workstations promise to substantially streamline the news-writing task by allowing a reporter to tap into many news sources with the flick of a few buttons. The result: sharper copy and a more widely researched story.

"We're seeing a transition to a file/server environment with a workstation on the desk and a central processor used only as a file management machine," said John Iobst, research manager at

the American Newspaper Publishers Association in Reston, Va.

Among the leaders of the pack is the *Chicago Tribune*, which is deeply involved in installing a text-editing system in an OS/2 environment. Software Services Manager Jim Joyce said the *Tribune* will link 400 Compaq Computer Corp. 386SXs to four Tandem Computers, Inc. CLX minicomputers over a 10M



Springer/Bettmann Film Archive

PC revolution at major dailies is making clattering newsrooms a thing of the past

bit/sec. Ethernet local-area network.

The PCs, each with 6M bytes of random-access memory, will be able to run several windows at once. For instance, a reporter or editor could draft a story on one window, view wire-service copy on a second and query the database from a third.

When cooperative processing is added, Joyce said, even functions such as hyphenation and justification — whereby text is horizontally and vertically formatted into newspaper columns — will occur in the background as the writer enters text. This will free up processing cycles on the Tandem CLXs, which will eventually function exclusively as database servers.

Joyce explained that the old editing system — a setup called Edit V that uses a Digital Equipment Corp. PDP-11 and Decsystem 10 — was custom-designed for the paper in the late 1970s and had become difficult to maintain.

Technological plunge

Although some papers are ready for a quick shift, others are not so anxious to take the technological plunge in the editorial department and try out a PC system in another area. At the *Houston Chronicle*, a network of nearly 100 Sun Microsystems, Inc. Sun-3 workstations streamline chores in the system administration and display advertising departments.

However, according to pagination coordinator John Mercer, the 2-year-old system has been working so smoothly that plans have already been drawn up to expand into the editorial department within the next 18 months.

Mercer said the original reason for going with its proprietary Raytheon system was that it was the only one capable of laying out and designing the elongated parallel broadsheet size of most newspapers, but open computing platforms have since boarded that boat.

Economics seem to have little to do with justifying the move away from proprietary systems. Rather, the choice of PC platforms seems to have more to do with long-term information systems goals. Analysts noted that the amortized price of a dedicated system is around \$10,000 per terminal, which compares closely to the purchase price of a fully loaded Intel Corp. 80386-based PC and its associated servers.

The transition represents a test of fire for publishing systems manufacturers. The seeds of proprietary, minicomputer-based systems in the newsroom germinated in the 1960s, when computerized typesetting systems first began appearing at newspapers, but typewriters re-

mained the common input device in editorial departments.

A decade later, typewriters had all but vanished in favor of dedicated terminals provided by such firms as Atex Publishing Systems and Raytheon.

However, publishing system manufacturers are not about to roll over and play dead. "There are many newspapers that have a very large investment in our systems and don't want to throw the baby out with the bathwater," said David Stern, a spokesman for Bedford, Mass.-based Atex.

As a result, Atex has introduced its PC Preference option, which allows newspapers to integrate PS/2s with existing Atex systems.

The New York Times has taken that approach and by the fall will have some 700 PS/2 Model 70s on an Atex system, which will replace a 12-year-old Harris Corp. system and dedicat-

ed terminals in the editorial department.

The *Times*' decision to use PCs, which will emulate the dedicated Atex terminals rather than start anew with a PC or workstation configuration, was made because of Atex's proven track record for reliability, according to systems director Stanley Kaplan.

The clashes between the two publishing designs also promise to get worse before they get better, said observers, who warn that newspaper automation battles in the 1990s could be as heated as anything that appears on the front page. "Getting the paper out is still the name of the game," Mercer said. "The future of the proprietary architectures depends on how they can change with the times. If they can adapt to what the world wants, they'll probably truck right on down the road. If not, they can be hard to justify."

More muscular Mac on tap

Apple aims high with hard-hitting IIFX series

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. will unveil a high-end Macintosh today, which becomes the most powerful argument yet that it intends to play hardball with the big boys of the workstation world.

The rollout of the Macintosh IIFX will be buttressed with the introduction of a strengthened version of its A/UX Unix derivative.

The three-member Mac IIFX series uses the power of Motorola, Inc.'s 40-MHz 68030 microprocessor and a 68882 floating-point coprocessor to provide computational performance on the level of Sun Microsystems, Inc.'s Sparcstation 1, product manager Frank Casanova said.

Part of the Mac IIFX's speed gains come from two dedicated I/O processors called peripheral interface controllers (PIC). The PIC chips manage some of the low-level I/O tasks on the Apple bus, floppy disk drives and serial ports that were previously carried out by the 68030.

One caveat to the PIC equation, however, is that a handful of Apple software applications will have to be altered to run on the Mac IIFX, Apple officials warned. Because of the addition of PIC chips, programs that write directly to the serial controller chip will need a software patch before they perform properly, Casanova said.

He added that this caveat applied to "less than 0.5%" of the 3,000 applications available for the Mac.

Apple officials said the Mac IIFX will be targeted at the traditional domain of the workstation:

the engineering, medical imaging, simulation and animation markets as well as power users in the financial community, such as traders on Wall Street.

Apple also assembled some of the best and brightest of its competitors for the two-year effort that created the Mac IIFX: Several members of the design team are veterans of such workstation giants as Hewlett-Packard Co.'s Apollo division.

Analysts said Apple's biggest obstacle in selling the new series will be a lingering perception of Apple as a producer of less powerful personal computers. "If Compaq had come out with this machine, people would say it's wonderful, but because it's Apple, people will probably poo-hoo it," said Charles Wolf, an analyst at the First Boston Corp. research firm in New York. "For some reason, Apple has to answer to a higher authority."

A/UX 2.0 is Apple's third version of its Unix implementation since the original debuted in February 1988. Version 2.0, which will be available mid-summer, will allow users to run multiple Macintosh, Unix and X Window System applications simultaneously on all models of the Apple line from the Mac SE/30 on up. Pricing was not available.

All of the Mac IIFX models come with 4M bytes of random-access memory. A single floppy-drive version will start at \$8,969. A model with an 80M-byte internal hard drive will sell for \$9,869, while one with a 160M-byte hard drive will start at \$10,969. A logic board upgrade, which can be swapped into a Mac II or IIX to increase it to the power of the IIFX, will sell for \$2,999.

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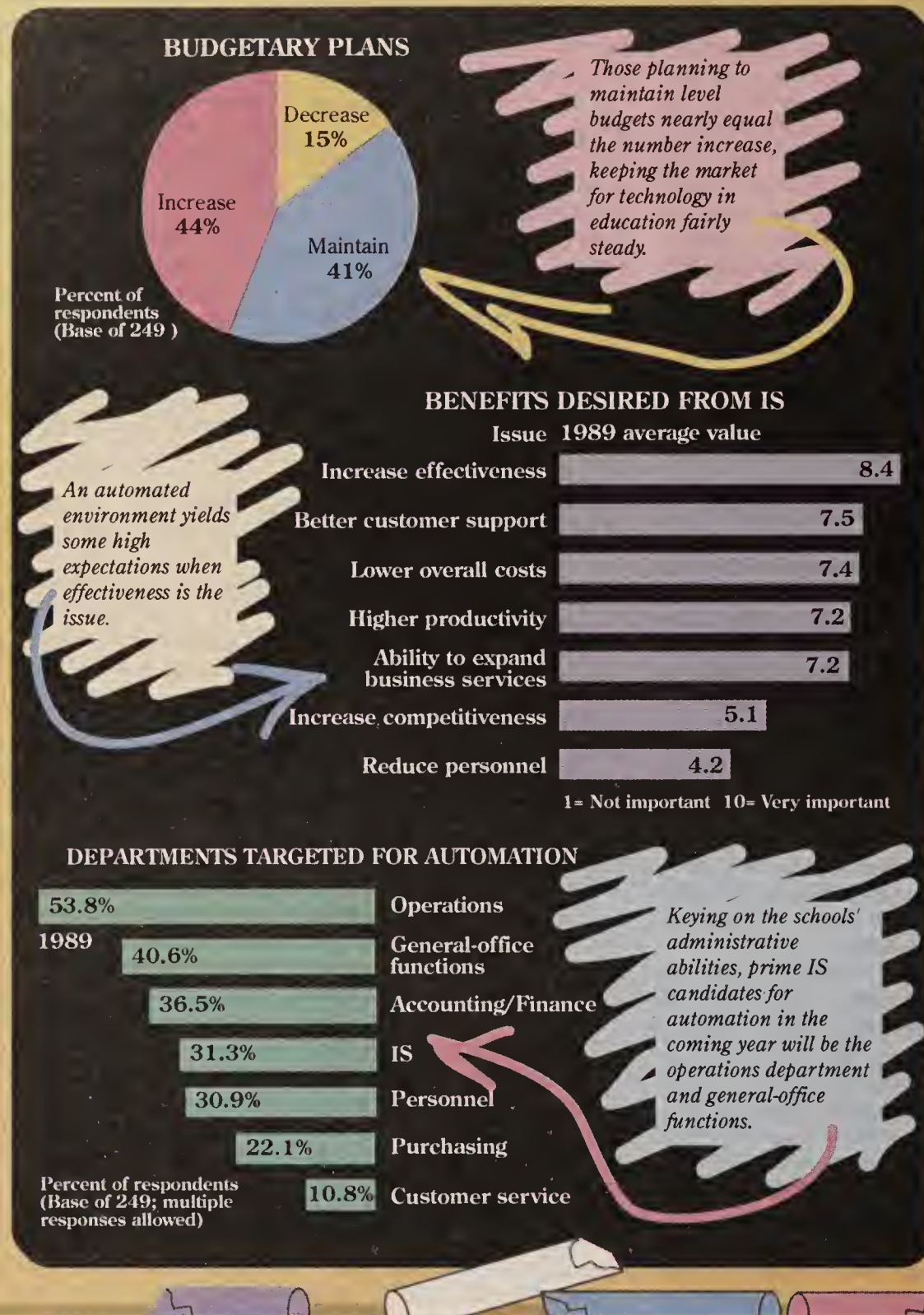


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TRENDS

The Education Market

IS managers in the education field won't be spending their new beefed-up 1990 budgets on overhauling their data centers to add the newest technological offerings. Instead they'll be enhancing their existing systems, as found in a recent study by The Sierra Group, Inc.



Source: The Sierra Group, Inc., Tempe, Ariz.

CW Chart: Doreen Dahle

N E X T W E E K

He is the man to whom much of the industry points when people want to know where an information systems executive can go in life. DuWayne Peterson of Merrill Lynch & Co. has been known as the million-dollar chief information officer since his salary and compensation hit the golden plateau. Watch for a profile in Manager's Journal.



Andy Freeberg

What do comic Sam Kinison, architectural precepts and system conversion have in common? Using an architectural framework, author Laurence Best ties them all together in next week's In Depth section by providing you with step-by-step instructions for changing platforms with minimum fuss. And it's no joke.

INSIDE LINES

Sorry, the number you have reached . . .

Chicago was the latest but by no means the last city to need an additional area code to handle rapidly rising business traffic — much of which is generated by computers, faxes and cellular telephones, an Illinois Bell spokesman said. "We've done no scientific study, but companies are buying big blocks of numbers" to serve new PBX systems, cellular telephones and data communications, he said. Illinois Bell's cellular subsidiary grew 60% last year, he added. Next in line for new area codes are San Francisco and Dallas.

Taking a byte out of backup

Network storage vendor Epoch Systems, based in Westboro, Mass., has applied for U.S. patents on a new but unannounced technology that company officials claim will dramatically reduce the lengthy backup time required for high-capacity storage systems. Backing up 30G bytes of data can take network managers up to seven days to accomplish. The Epoch product — likely to be announced within the next few months — will reportedly reduce that burden to less than one day.

Selling like mudcakes

Ing. C. Olivetti saw its hopes for cashing in on IBM MCA compatibility dashed last year. The company reportedly expected to sell 100,000 of its MCA compatibles. Its salesmen only succeeded in nailing down 500 orders.

Everyone has his price

Last summer, Intecom whipped off a hot letter to *Computerworld*, denying a report that the selling price for the company had dropped from \$100 million to about \$60 million. Well, Wang sold the Intecom white elephant two weeks ago for an amount estimated at \$50 million to \$70 million.

And speaking of Lotus . . .

One source close to Lotus' 1-2-3/G marketing efforts says the project is off schedule. On the other hand, a knowledgeable and reliable source says to look for an announcement in a few weeks. We think we'll go with the latter prediction, especially since Jack McGrath, who publishes a 1-2-3 newsletter and is a G beta tester, says the product is in good shape.

Can you say epidemic?

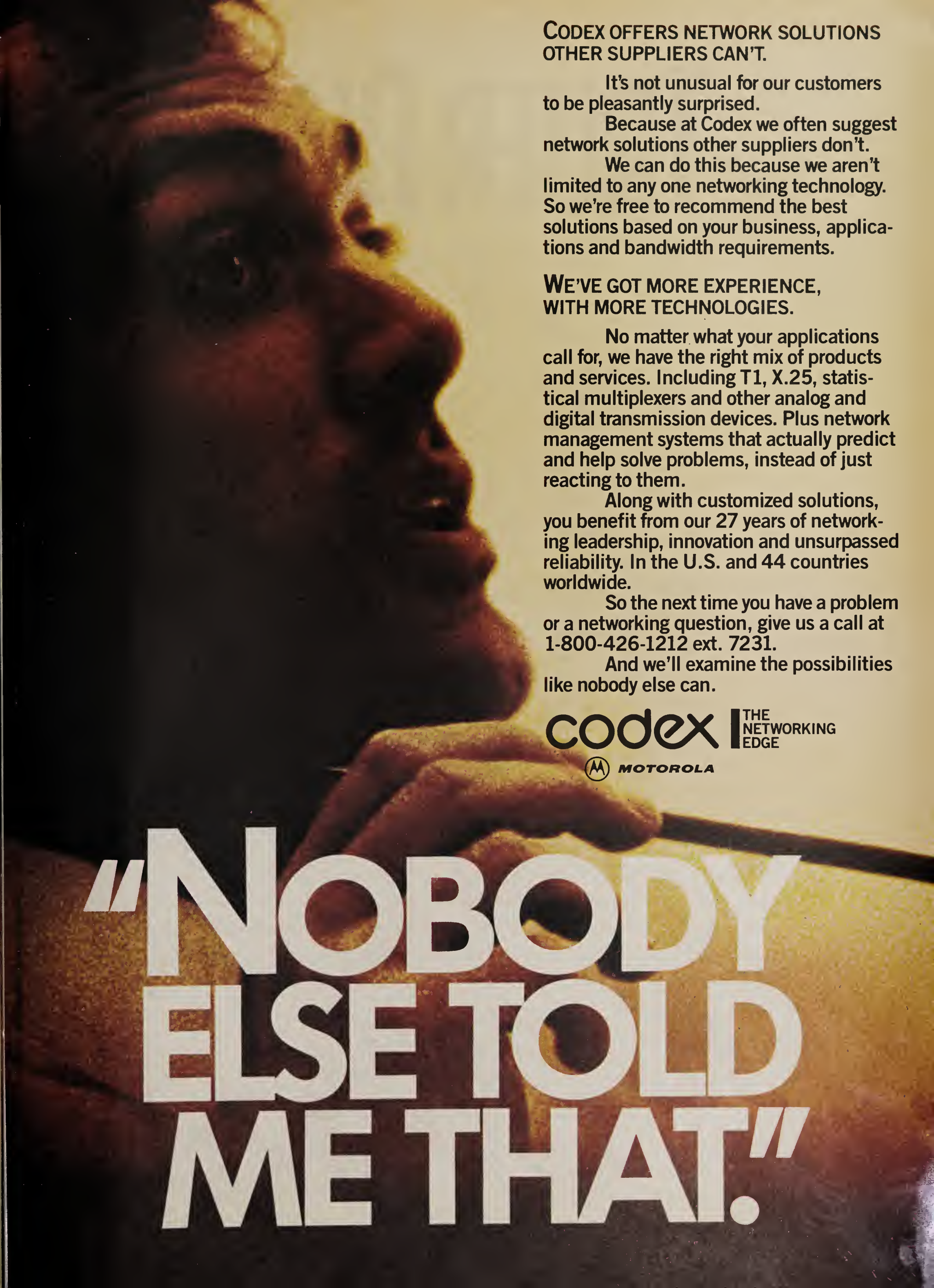
Virus attacks may have left the front pages of most newspapers, but they are still out there and multiplying. Foundation Ware, a Cleveland, Ohio, antivirus software publisher, will release a study on the spread of viruses tomorrow. The study will reportedly predict that viruses may attack 10 million personal computers over the next two years.

Meanwhile, new strains of viruses are popping up with alarming frequency, according to expert virus watchers. Researchers uncovered 10 new virus strains in 1989, but since last November, they have discovered 21 new distinct strains. There are now between 50 and 54 distinct strains and more are coming every day.

Network staying power

A de facto networking standard long associated with Unix and Transmission Control Protocol/Internet Protocol has been snuggling up quite a bit to OS/2 of late. IBM announced its TCP/IP product for OS/2 last January, and now a small network software company, FTP, is expected to follow suit next week. The market? Companies that want to hook OS/2 systems onto existing TCP/IP networks.

You think it's easy making \$20 million a year? The barrage of massively negative press coverage, some of it targeting Jim Manzi, led the Lotus CEO to quip to his staff at one point that he'd spent all of 1988 hiding under his desk, Lotus P.R. Director Heidi Sinclair said in a recent speech. Maybe now that many new 1-2-3s are out the door, he can come out and help take the pads off the elevators at 1 Rodgers Street, a new facility that recently opened up. If you want to share your own tips and rumors on releases or anything else, call, fax or E-mail News Editor Pete Bartolik at (800) 343-6474 (phone), (508) 875-8931 (FAX) or COMPUTERWORLD on MCI Mail.



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